CDP-CX90ES/CX270

SERVICE MANUAL

US Model
Canadian Model
CDP-CX90ES/CX270
AEP Model
CDP-CX270

PHOTO : CDP-CX90ES

Model Name Using Similar Mechanism	CDP-CX250
CD Mechanism Type	CDM-40
Base Unit Type	KSM-213BKN/M-N
Optical Pick-up Type	KSS-213B/S-N

SPECIFICATIONS

Compact disc player

Laser
Semiconductor laser (λ = 780 nm)
Emission duration: continuous

Laser output
Max 44.6 μW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.

Frequency response
20 Hz to 20 kHz ± 0.3 dB

Dynamic range
More than 98 dB

Harmonic distortion
Less than 0.0027%

Outputs

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	−18 dBm	Wave length: 660 nm
MONITOR OUT	Phono jack	1 Vp-p	75 ohms, unbalanced, sync negative

General

Power requirements
120 V AC, 60 Hz (USA, Canadian model)
220V-230V AC, 50Hz (AEP, German model)

Power consumption
19 W

Dimensions (approx.) (w/h/d)
When the front cover is closed
430 × 198.5 × 477 mm
(17 × 7 7/8 × 18 7/8 in.) incl. projecting parts
When the front cover is open
430 × 198.5 × 600 m
(17 × 7 7/8 × 23 5/8 in.) incl. projecting parts

Mass (approx.)
9.6 kg (21 lbs 2 oz)

Supplied accessories

Audio cord (2 phono plugs – 2 phono plugs) (1)
Video cord (1)
Remote commander (remote) (1)
Sony SUM-3 (NS) batteries (2)
CD booklet holders (2)
Label (1)

Design and specifications are subject to change without notice.

MICROFILM

COMPACT DISC PLAYER

SONY®

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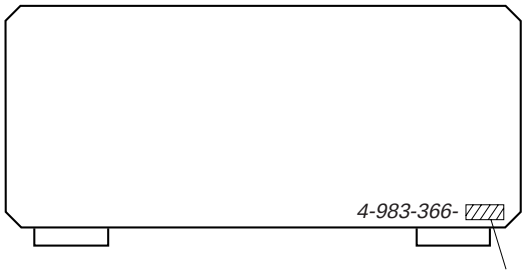
Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

MODEL IDENTIFICATION
— BACK PANEL —

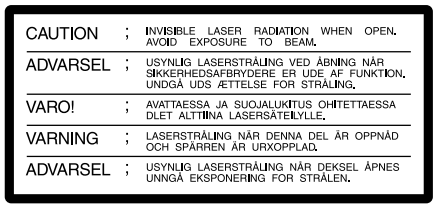


CX270 : US Model : 0☐
CX270 : Canadian Model : 1☐
CX270 : AEP,German Model : 2☐
CX90ES : US Model : 3☐
CX90ES : Canadian Model : 4☐

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.


CAUTION ; INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL ; USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDS ÆTTELSE FOR STRÅLING.
VARO! ; AVATTAESSA JA SUOJALUKITUS OHITETTAESSA DLET ALTTIINA LASERSÄTEILYLLE.
VARNING ; LASERSTRÅLING NÄR DENNA DEL ÄR OPPNAD OCH SPÄRREN ÄR URXOPPLAD.
ADVARSEL ; USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN.

This caution label is located inside the unit.

For the customers in Canada

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

SECTION 1
SERVICING NOTE

SAFETY CHECK-OUT
(US model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth Ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

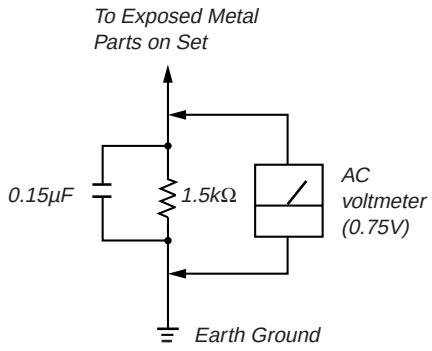


Fig. A. Using an AC voltmeter to check AC leakage.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the "S curve check" in "CD section adjustment" and check that the S curve waveform is output repeatedly.

COLD RESET

This mode erases all the data memorized on the user memory of this unit and sets to the same state as shipment. Take note not to set it accidentally. To set cold reset, press the POWER button while pressing the CLEAR button.
The backup memory of this unit will be saved for about one month.

POSITIONING ON THE OSD (ON SCREEN DISPLAY) SCREEN

This unit can display disc titles, etc. on the TV screen. The screen position can be adjusted to correct screen deviations of the TV monitors used. Turn on the power and press the OPEN button to open the front cover. Then press the TIME/TEXT button next to display the position of the screen. The position can be adjusted by pressing the cursor button of the remote control unit supplied.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

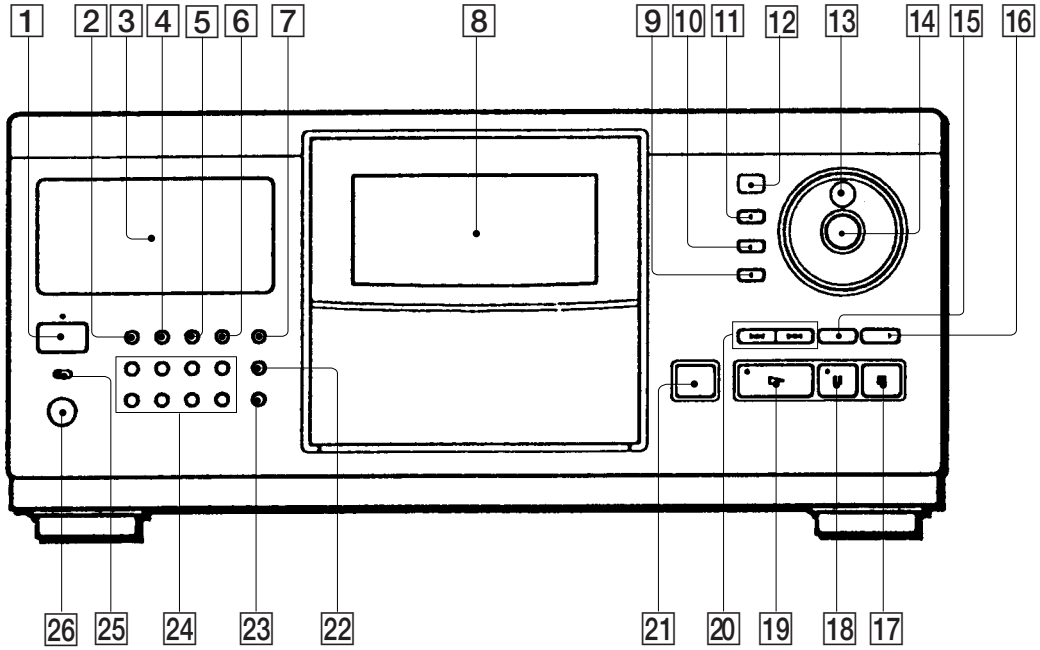
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 2
GENERAL

LOCATION OF PARTS AND CONTROLS

Front Panel



1 POWER button
2 CONTINUE button
3 Front panel display
4 SHUFFLE button
5 PROGRAM button
6 REPEAT button
7 TIME/TEXT button
8 Front cover
9 SORT button
10 INPUT button
11 PLAYER SELECT button
12 Remote sensor
13 JOG dial
14 ENTER button
15 CHECK button
16 CLEAR button
17 ■ (stop) button
18 ❚❚ (pause) button
19 ▷ (play) button
20 ⏮ AMS* ⏭ button
21 OPEN button
22 HIT LIST buttons
23 X-FADE buttons
24 GROUP buttons 1-8
25 TIMER switch
26 Keyboard jack

* AMS is the abbreviation for Automatic Music Sensor.

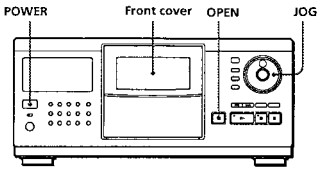
When using another Sony CD player together with this player

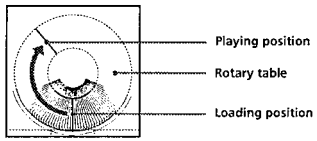
You can make the supplied remote effective only for this player.

- When using a player equipped with the COMMAND MODE selector:
  Leave the COMMAND MODE selector of this player to CD2 which is set at the factory and that of another player to CD1 or CD3. Then set the CD1/2/3 switch on the remote supplied for each player accordingly.
- When using a player not equipped with the COMMAND MODE selector:
  The command mode of the player without the COMMAND MODE selector is set to CD1. Leave the COMMAND MODE selector of this player and the CD1/2/3 switch on the remote to CD2.

Inserting CDs

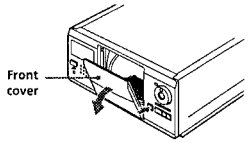
You can insert up to 200 discs into this player.



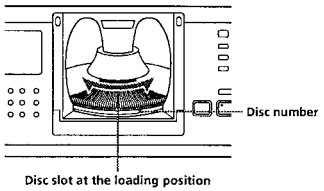


1 Press POWER to turn on the player.

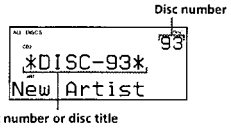
2 Press OPEN.



3 Turn the JOG dial until you find the disc slot where you want to insert a disc, while checking the disc number (written beside every five slots and also indicated in the display).



The disc number at the loading position appears in the front panel display.* If you have labeled the disc with disc title (see page 23), the disc title appears instead of the disc number. As you turn the JOG dial, the disc number or the disc title changes.

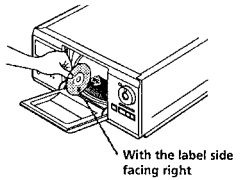


* If you have already inserted discs, the disc number at the playing position appears. When you turn the JOG dial, the displayed disc number changes to the one at the loading position.

4 Insert a disc with the label side facing right.

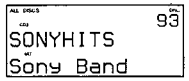
Notes

- Make sure you have inserted the disc into each slot at a right angle to the rotary table. If the disc is not put in straight, it may damage the player or the disc.
- Make sure the rotary table comes to a complete stop before inserting or removing discs.



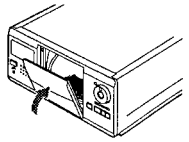
This section is extracted from instruction manual.

After inserting the disc, you can replace the disc number with the original disc title (see "Labeling Discs" on page 23) to locate it easily when you start playing.



5 Repeat Steps 3 and 4 to insert more discs.

6 Close the front cover by pushing up the cover until it clicks.



The rotary table turns and the disc slot at the loading position is set to the playing position. Always keep the front cover closed except when you insert or remove discs.

The supplied CD booklet holders help you locate a disc

You can store up to 200 CD booklets. Insert a booklet and stick the number label on the film of a pocket and the booklet so that you can locate the disc easily.

Notes

- When you insert an 8 cm (3-inch) CD, be sure to attach a Sony CSA-8 adaptor (not supplied) to the disc. **Do not insert an empty 8 cm (3-inch) CD adaptor (CSA-8). It may damage the player.**
- **Do not attach anything such as seals or sleeves to discs. It may damage the player or the disc.**
- If you drop a disc into the player and the disc won't go into the slot correctly, consult your nearest Sony dealer.
- When transporting the player, remove all discs from the player.

Removing CDs

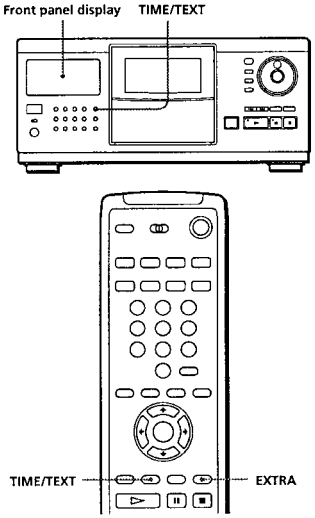
After following Steps 1 through 3 of "Inserting CDs" on page 8, remove the discs. Then close the front cover.

Note

The disc being played does not come to the loading position if you open the front cover during playback. (The disc number flashes in the display.)
If you want to remove the disc being played, press ENTER in the center of the JOG dial after opening the front cover. The disc comes to the loading position. Remove the disc after the rotary table comes to a complete stop.

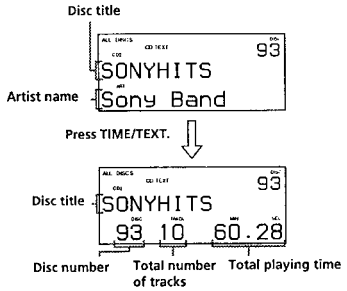
Using the Front Panel Display

You can check information about the disc using the front panel display.



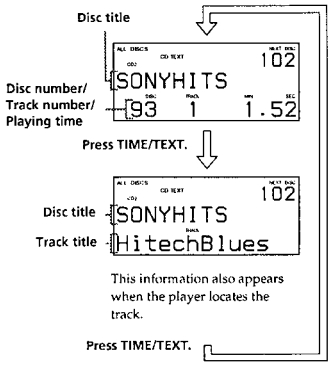
Display information before you start playing

The front panel display shows the current disc title and artist name. If you have not labeled the disc, the disc number and "New Artist" appear instead of the Disc Memo information (see "Labeling Discs" on page 23). When you press the TIME/TEXT button, you can check the total number of tracks and total playing time of the disc.



Display information while playing a disc

Each time you press the TIME/TEXT button, the front panel display shows the current disc information as shown below.



If you have not labeled the track (see "Labeling each track" on page 24), the front panel display information does not change when you press the TIME/TEXT button.

If you have CD-TEXT discs

CD-TEXT discs have information, such as the disc titles or artist names, memorized in a blank space on the discs where there is no information on normal discs. The CD-TEXT information (disc title, artist name and track title) will be stored as the Disc Memo automatically, so you can check that information in the same way as shown above.

To play disc highlights

Some CD-TEXT discs have a feature to play only the highlights of the discs.
Press EXTRA in the stop mode. The player starts playing the disc highlights in Continuous Play mode. The indicator on the ▷ button flashes while playing disc highlights.
If you press the EXTRA button while selecting a disc without this feature, "NO HIGHLIGHT" appears in the front panel display.

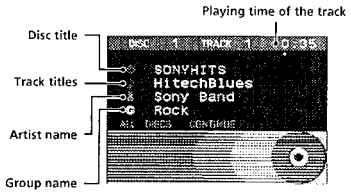
- You can cancel playing disc highlights by pressing the ▷ or ◀◀/▶▶ buttons on the remote.
- You can play the previous or next highlight on the disc by pressing the ⏮/⏭ buttons (AMS, see page 16).
- You can repeat disc highlights (see page 17).
  Press REPEAT. The player repeats all the highlights on the disc. During Repeat 1 mode, the player repeats only the current highlight.

Using the On-Screen Display

If you connect the player to your TV as indicated on pages 4 and 5, you can control the player while checking information with the on-screen display on the TV screen.
After connecting the player and TV, select the video input on the TV. If you have a Sony TV, you can select the video input by pressing the TV/VIDEO button on the supplied remote.

Display information while playing a disc

The on-screen display shows the current disc information stored in the Custom Files (see page 23) and playing time of the track.



Display information while controlling the player

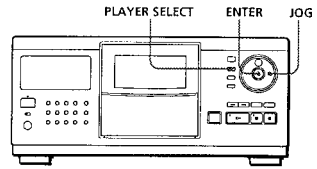
The on-screen display shows information useful for each operation.

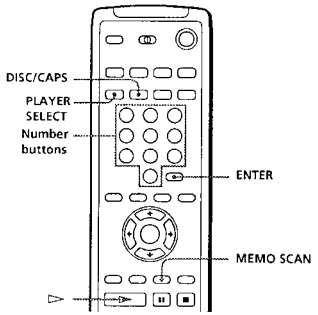
The following icons are used in the on-screen display.

When the on-screen display shows	It means
↑/↓/←/→	You can select the items using the ↑/↓/←/→ buttons on the remote
H	The track is stored in the Hit List (see page 29)
T	The disc is CD-TEXT disc
②	The disc is inserted in the second player

You can adjust the on-screen display position on the TV screen
While the front cover is open, press TIME/TEXT then press ↑/↓/←/→ on the remote to adjust the position.

Locating a Specific Disc





Selecting a disc on the player

Turn the JOG dial until the disc number or disc title (see page 23) you want appears in the front panel display. Press ENTER to start play.

Selecting a disc directly using the remote

1 Press DISC/CAPS.

2 Press the number button of the disc.
Example: To enter number 35
Press 3, then 5.
To enter number 100
Press 1, then 0 twice.

3 Press ENTER to start play.

Selecting a disc when connected to the second player

1 Press PLAYER SELECT to select the player in which the disc you want is inserted.
When you select the second player, "2nd PLAYER" appears in the front panel display.

2 Select the disc you want following the procedure in "Selecting a disc on the player" or "Selecting a disc directly using the remote."

Locating a disc by scanning each disc title (Memo Scan)

You can locate a disc you want to play quickly by scanning the disc titles (see page 23) in the front panel display and start playing.
Note that you cannot use this function in ALL DISCS Shuffle Play mode.

1 Press MEMO SCAN.
"MEMO SCAN" appears and the disc titles scroll in the front panel display.

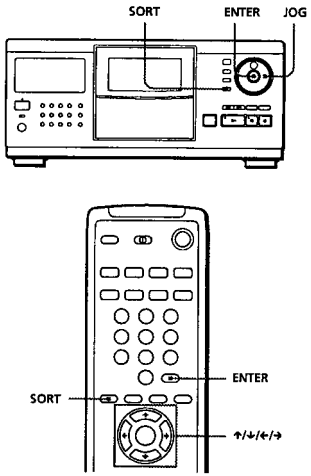
To cancel Memo Scan
Press MEMO SCAN again.

2 Press ▷ when the disc title of the disc you want to play appears.
The disc is set to the playing position, and the player starts playing.
In Program Play mode, the disc will be added to the end of the program if you press the ENTER button instead of the ▷ button.

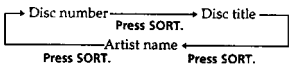
Note
If "NO ENTRY" appears in the front panel display, no disc has been labeled with disc titles. Try the Memo Scan function again after labeling the discs with disc titles (see page 23).

Sorting Out Discs in Three Ways (Sort)

When locating discs, you can select three sorting methods, by disc number, disc title and artist name.



Each time you press the SORT button, the sorting method changes as shown below.



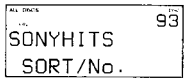
When you sort by	The display shows the discs in
Disc number	Numerical order of the disc numbers
Disc title*	Alphabetical order of the disc titles
Artist name*	Alphabetical order of the artist names

* Label discs to sort them by disc titles and artist names (see "Labeling Discs" on page 23).

When locating a disc by disc number

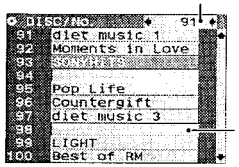
1 Press SORT repeatedly to select the sorting method.

Front panel display



On-screen display

The on-screen display shows disc titles from disc number 91.



The empty disc slots appear indented.

2 Turn the JOG dial (when using the remote, press ↑/↓ repeatedly) to select the disc you want.
When using the remote, you can skip every 10 discs by pressing the ←/→ buttons.

3 Press ENTER to start playing the disc.
The disc number being played is highlighted in the on-screen display.

When locating a disc by disc title

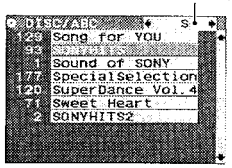
You can search a disc title by specifying the first character of the disc title. When you specify a character, the disc titles starting with the character appear.

1 Press SORT repeatedly to select the sorting method.

Front panel display

On-screen display

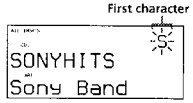
First character



2 Press ←/→ on the remote repeatedly to select the first character of the disc title you want.

Front panel display

First character



Each time you press the ←/→ buttons, you can select alphabets and then numbers.
The characters which have not been used as the first character of disc titles will be skipped and the next one will appear.

Notes

- When searching disc titles, blanks before the first character in the disc title are ignored.
- When searching disc titles, upper and lower case characters cannot be differentiated.

3 Turn the JOG dial (when using the remote, press ↑/↓ repeatedly) to select the disc you want.

4 Press ENTER to start playing the disc.

When locating a disc by artist name

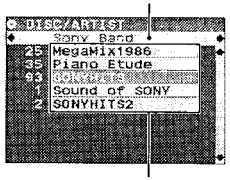
You can locate a disc by artist name. When you specify an artist name, the disc titles of the artist appear.

1 Press SORT repeatedly to select the sorting method.

Front panel display

On-screen display

Selected artist name



Disc titles of the artist

(Continued)

2 Press ←/→ on the remote repeatedly to select the artist name.

3 Turn the JOG dial (when using the remote, press ↑/↓ repeatedly) to select the disc you want.

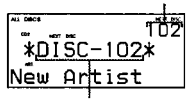
4 Press ENTER to start playing the disc.

Specifying the Next Disc to Play

You can specify the next disc to play while playing a disc in Continuous or 1 DISC Shuffle Play mode.

While playing a disc, turn the JOG dial until the disc number or disc title (see page 23) you want appears in the front panel display.

Next disc number



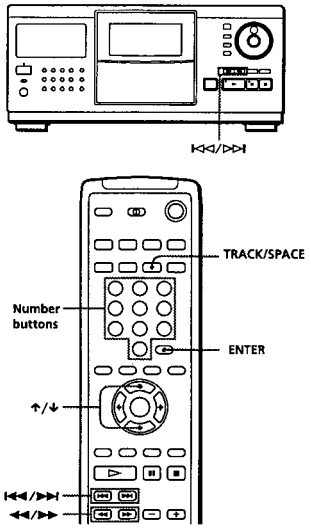
Next disc number or disc title appears for a while.

After the current disc is played, the next disc you have specified starts playing.
If you want to skip to the next disc right away, press ENTER while playing the current disc.

To cancel the disc you have specified
Press CONTINUE twice.

Locating a Specific Track or a Point in a Track

You can quickly locate any track while playing a disc using the I◄◄/►►I (AMS: Automatic Music Sensor) buttons or number buttons on the remote. You can also locate a specific point in a track while playing a disc.



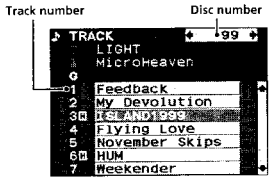
To locate	Press
the next or succeeding tracks	▷▷I repeatedly until you find the track
the current or preceding tracks	I◁◁ repeatedly until you find the track
a specific track directly	TRACK/SPACE, the number button of the track, and then ENTER. When you locate a track with a number over 10, press the tens digit first, then the ones digit.
a point in a track while monitoring the sound	▶▶ (forward) or ◀◀ (backward) and hold down until you find the point
a point in a track quickly by observing the display	▶▶ (forward) or ◀◀ (backward) and hold down until you find the point during pause. You will not hear the sound during the operation.

Note
If "OVER" appears in the front panel display, the disc has reached the end while you were pressing the ▶▶ button. Press ◀◀ or I◁◁ to go back.

Checking the track titles using the on-screen display

After labeling tracks (see page 24), you can select the track you want before you start playing while checking the track titles.

1 Press TRACK/SPACE.



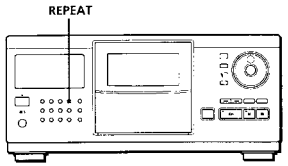
The track titles stored in Delete File appear indented (see "Storing Specific Tracks" on page 28).

2 Press ↑/↓ to select the track you want.

3 Press ENTER to start playing the track.
The track title being played is highlighted in the on-screen display.

Playing Repeatedly

You can play discs/tracks repeatedly in any play mode.



Press REPEAT while playing a disc.
"REPEAT" appears in the front panel display. The player repeats the discs/tracks as follows:

When the disc is played in	The player repeats
ALL DISCS Continuous Play (page 10)	All tracks on all discs
1 DISC Continuous Play (page 10)	All tracks on the current disc
ALL DISCS Shuffle Play (page 18)	All tracks on all discs in random order
1 DISC Shuffle Play (page 18)	All tracks on the current disc in random order
Program Play (page 18)	The same program

To cancel Repeat Play
Press REPEAT repeatedly until "REPEAT OFF" appears in the front panel display.

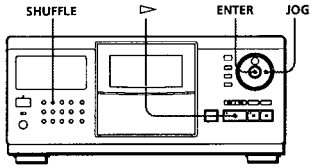
Repeating the current track (Repeat 1)

You can repeat only the current track.

While the track you want is being played, press REPEAT repeatedly until "REPEAT 1" appears in the front panel display.

Playing in Random Order (Shuffle Play)

You can have the player "shuffle" the tracks and play in random order. The player shuffles all the tracks on all discs or on the disc you specified.



1 Press SHUFFLE to select ALL DISCS or 1 DISC Shuffle Play mode.
Each time you press SHUFFLE, "ALL DISCS" or "1 DISC" appears in the front panel display.

When you select	The player plays
ALL DISCS	All tracks on all discs in random order. When connected to the second player, the player selects the tracks from both this player and the second player.
1 DISC	All tracks on the selected disc in random order

2 When you want to specify the disc for 1 DISC Shuffle Play, turn the JOG dial until the disc number or disc title (see page 23) you want appears in the front panel display.

3 Press ENTER or ▷.
ALL DISCS or 1 DISC Shuffle Play starts.
"↻" appears in the front panel display while the player is "shuffling" the discs or the tracks.

To cancel Shuffle Play
Press CONTINUE.

You can start Shuffle Play while playing
Press SHUFFLE, and Shuffle Play starts from the current track.

You can directly select a disc for 1 DISC Shuffle Play
See "Selecting a disc directly using the remote" on page 13.

You can go to the next disc during 1 DISC Shuffle Play
Press DISC SKIP +.

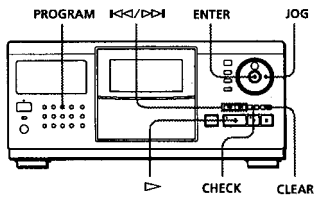
You can specify the next disc to play during 1 DISC Shuffle Play
Turn the JOG dial to specify the next disc. After all the tracks on the current disc are played in random order, the next disc starts playing. If you want to skip to the next disc right away, press ENTER while playing the current disc.

Notes
- You cannot specify the next disc to play during ALL DISCS Shuffle Play.
- Even if you press the ■ button or turn off the player during ALL DISCS Shuffle Play, the player remembers which discs/tracks were played and which were not. Therefore, if you want to start ALL DISCS Shuffle Play again from the beginning, be sure to repeat the procedure from Step 1.

Creating Your Own Program (Program Play)

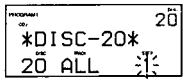
You can arrange the order of the tracks and/or discs to create three different programs and the programs are stored automatically. A program can contain up to 32 "steps" — one "step" may contain a track or a whole disc.
You can also create programs by different procedure using the remote. You can use both the front panel and the on-screen display information when programming in either procedure.

Creating a program on the player

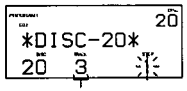


1 Press PROGRAM until the program number you want (PROGRAM 1, 2 or 3) appears in the front panel display.
If a program is already stored in the selected program number, the last step of the program appears in the front panel display. When you want to erase the whole program, hold down CLEAR until "ALL CLEAR" appears in the front panel display (see page 20).

2 Turn the JOG dial until the disc number you want appears in the front panel display.



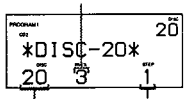
3 To program a whole disc, skip this step. Press ⏮/⏭ until the track number you want appears in the front panel display.



Track number

4 Press ENTER or PROGRAM.

The track being programmed



The disc being programmed | Playing order

5 To program other discs/tracks, do the following:

To program	Repeat Steps
Other discs	2 and 4
Other tracks on the same disc	3 and 4
Other tracks on other discs	2 through 4

6 Press ▷ to start Program Play.

To cancel Program Play
Press CONTINUE.

The programs remain even after Program Play ends
When you press the ▷ button, you can play the same program again.

When you press PROGRAM during Continuous or Shuffle Play
The program will be played after the current track.

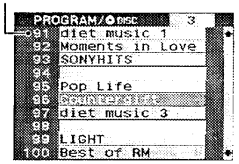
The programs remain until you erase them
If you replace discs, the programmed disc and track numbers remain. So, the player plays only the existing disc and track numbers. However, the disc and track numbers that are not found in the player or on the disc are deleted from the program, and the rest of the program is played in the programmed order.

When connected to the second player, you can program tracks/discs of both players in the same program
When selecting a disc, press PLAYER SELECT repeatedly until "2nd PLAYER" appears in the front panel display. Then select the disc you want to program.

Creating programs while checking the on-screen display information

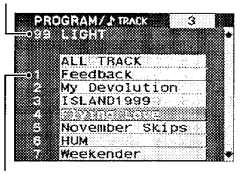
While creating programs
You can select the discs/tracks by checking the titles. While selecting a disc, the on-screen display shows the disc titles in the order of the disc number.

Disc number



While selecting a track, the on-screen display shows the track titles.

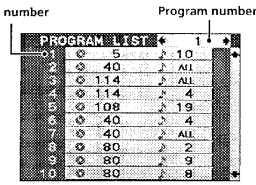
Disc number and disc title



Track number

When checking the programs
The on-screen display shows the disc and track numbers of each step in the programmed order.

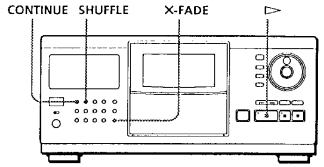
Step number | Program number



The program number (1, 2 or 3) you are checking appears in the upper right corner of the on-screen display.

Playing Alternately (X-Fade Play)

When you connect the second player (see page 6), you can play the discs/tracks in this player and those in the second player alternately in Continuous Play and Shuffle Play modes.
Each time the current player changes to the other player, the sound from both players is mixed. The current player ends play by fading out, and the other player starts play by fading in.



1 Press CONTINUE or SHUFFLE to select the play mode you want.

2 Press X-FADE.
"X-FADE" appears in the front panel display and the X-FADE button lights up.

3 Press ▷ to start playing.

When you select	The player alternately plays
ALL DISCS Continuous Play (page 10)	Tracks of all discs from each player in the order of the disc number
1 DISC Continuous Play (page 10)	Tracks on the selected discs from each player
ALL DISCS Shuffle Play (page 18)	Tracks of all discs from each player in random order
1 DISC Shuffle Play (page 18)	Tracks on the selected discs from each player in random order

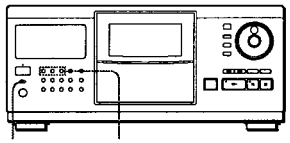
The player automatically selects the repeat mode when X-Fade Play starts. So, the play doesn't stop if the player has played all the discs/tracks in one player ahead of the other player.

To cancel X-Fade Play
Press X-FADE again.

Notes
- You cannot use the Sort and Group Play functions during X-Fade Play.
- During X-Fade Play, the PLAYER SELECT, INPUT and ENTER buttons and the JOG dial do not work.
- You cannot use the X-Fade Play function when connected to the CD player CDP-CX153.

Playing Using a Timer

You can start playing a disc at any time you want by connecting a timer (not supplied). Please also refer to the instructions for the timer if you need help.



1 Press one of the play mode buttons to select the play mode you want.

2 Set TIMER on the player to PLAY.

3 Set the timer to the time you want.
The player turns off. When the set time comes, the player turns on and starts playing.

4 After you are finished using the timer, set TIMER on the player to OFF.

Using a Sony Receiver With the On-Screen Display Control Function

If you have a Sony receiver (amplifier) with the on screen display control function, you can control the player using the remote supplied with the receiver (amplifier).

1 Connect the player to the VIDEO jack on the receiver (amplifier), and register the IR code of the jack to which this player is connected as "CONTROL A1/CD2."

2 Click LIST on the on-screen display using the remote supplied with the receiver (amplifier). The on-screen display changes to the CD player information display.

3 Click EXIT to return to the receiver (amplifier) information display.

For details on this function, refer to the instructions supplied with the receiver (amplifier).

Notes
- When the CD player information display does not fit inside the receiver's (amplifier's) on-screen display control panel, adjust the position using the GRAPHIC POSITION function on the receiver (amplifier).
- The CD player information display may return to the receiver (amplifier) information display while playing discs, depending on the connected receiver (amplifier).
- There might be a difference between the remote's sensitivity (FEELING) with the CD player information display and the receiver (amplifier) information display.

What You Can Do With the Custom Files

The player can store four types of information called "Custom Files" for each disc. Once you have stored Custom Files for a disc, the player automatically recalls what you have stored whenever you select the disc. Note that Custom Files will be erased if you do not use the player for about one month.

You can store this information:

When you use	You can
Disc Memo (page 23)	Label discs with disc and track titles* and artist names using up to 16 characters for each entry
Group File (page 26)	Group discs in up to eight groups to locate them easily
Delete File (page 28)	Delete unwanted tracks and store only the tracks you want
Hit List (page 29)	Store the tracks you play frequently

* You can label up to 16 tracks.

Where are Custom Files stored?

Custom Files are stored not on the disc, but in the player's memory. It means you cannot use Custom Files when you play the disc on another player.

If you replace discs you have filed in the Custom Files

The Custom File information you have stored remains, since each Custom File information is assigned to each slot. Erase all Custom Files (Disc Memo, Delete File, Group File and Hit List) of the old disc, then file the new disc information in the Custom Files.

Erasing all Custom Files of all discs

Turn off the player. While holding down CLEAR, press POWER to turn on the player. "ALL ERASE" appears in the front panel display, and all Custom Files will be erased after a while.

Erasing all Custom Files of a disc

Select the disc you want to clear. While holding down CLEAR, press INPUT.

When you select a CD-TEXT disc
- The CD-TEXT information (disc title, artist name and track titles) is stored as the Disc Memo automatically. If an entry has more than 16 characters, the first 16 characters are stored (see also page 12).
  When you replace a disc with a CD-TEXT disc, the CD-TEXT information replaces the Custom File for the old disc automatically.
  You cannot change the Disc Memo for a CD-TEXT disc.
- You can group CD-TEXT discs in the same way as normal discs.
- If you connect a second player that can read the CD-TEXT information, the CD-TEXT information is stored as the Disc Memo automatically when you select a CD-TEXT disc in that player. However, if the second player is the CDP-CX250, artist names cannot be stored.

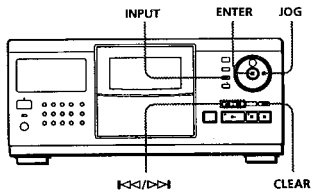
When storing the Disc Memo and Group File information
You might find it difficult to input all the track and disc information of 200 discs using the controls on the player or the remote. To make the task easier, you can use an IBM-compatible PC keyboard (see "Storing Custom File information using a keyboard" on page 28).

Labeling Discs (Disc Memo)

You can store the disc title, artist name and track titles of each disc using up to 16 characters for each entry, and have the player display the Disc Memo each time you select the discs/tracks.

You can label discs while the front cover is open

Labeling discs with disc titles



1 Turn the JOG dial to select the disc.
When you label a disc with the front cover closed, the disc number of the disc at the playing position appears.
When you label a disc with the front cover open, the disc number at the loading position appears.

(Continued)

2 Press INPUT.

3 Turn the JOG dial until "DISC MEMO",appears in the front panel display, then press ENTER.
The flashing cursor (◀) appears.

4 Turn the JOG dial until the character you want appears in the front panel display.
The cursor disappears and the first space for the disc title flashes.
As you turn the JOG dial clockwise, the characters appear in the following order. Turn the JOG dial counterclockwise to go back to the previous character.

(space) A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z 0 1 2 3 4 5 6 7 8 9 ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~

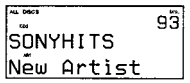
5 Press ENTER to select the character.
The selected character lights up, and the flashing cursor appears to indicate the next space to be input.

If you have made a mistake
Press CLEAR and begin again by inputting the correct characters.

6 Repeat Steps 4 and 5 to input more characters.

If you want to input other Disc Memo information (artist name or track titles) of the same disc sequentially
Press ENTER repeatedly until the cursor goes to the space for the item you want, and you can input the information.

7 Press INPUT to store the disc title.
The disc title lights up in the front panel display.



Repeat Steps 1 through 7 to assign disc titles to other discs.

Labeling discs with artist names

1 Turn the JOG dial to select the disc.

2 Press INPUT.

3 Turn the JOG dial until "ARTIST NAME" appears in the front panel display, then press ENTER.
"New Artist" flashes in the front panel display.

4 Press ENTER.
The flashing cursor (◀) appears.

5 Input the artist name following Steps 4 through 7 in "Labeling discs with disc titles" on page 23.

You can select the artist name without inputting when labeling another disc by the same artist
After pressing the ENTER button in Step 3 above, turn the JOG dial. As you turn the JOG dial, the front panel display shows the artist names which have been assigned to other discs. Press ENTER to select the artist name for the current disc.
If you correct the artist name, all discs by the same artist will be corrected.

Labeling each track

1 Turn the JOG dial to select the disc.

2 Press INPUT.

3 Turn the JOG dial to select the track, then press ENTER.
The flashing cursor (◀) appears.

4 Input the track title following Steps 4 through 7 in "Labeling discs with disc titles" on page 23.

If you have made a mistake while inputting a character

To correct a character which has been input
1 Press ⏮ or ⏭ until the cursor moves next to the incorrect character.

2 Press GROUP/DEL to delete the incorrect character.

3 Input the correct character.

To correct the character currently being input
1 Press GROUP/DEL to delete the incorrect character.
2 Input the correct character.

To insert a character between the input characters
Press ⏮ or ⏭ until the cursor moves next to the point you want to insert, then input the character.

Erasing the Disc Memo

1 Select the disc whose Disc Memo you want to erase.

2 Press INPUT.

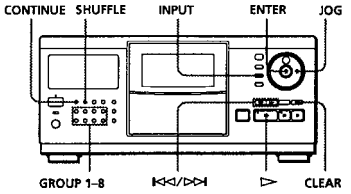
3 Turn the JOG dial (when using the remote, press ↑/↓) until the item you want to clear (disc title, artist name or track title) appears in the front panel display, then press ENTER.

4 Press CLEAR.
The Disc Memo disappears.

5 Press INPUT.

Grouping Discs (Group File)

You might find that too many discs make it hard to find the disc you want. This player has a feature that lets you classify discs into eight groups and label each group with category etc. using up to 16 characters (Group Memo). One disc can be put into only one group.
Once you classify discs, you can enjoy Continuous, Shuffle or Repeat Play only within a certain group (Group Play).



Putting discs into groups

1 Press CONTINUE or SHUFFLE before you start playing.

2 Turn the JOG dial to select the disc which you want to put into a group.

3 Press INPUT.

4 Turn the JOG dial until "GROUP FILE" appears in the front panel display, then press ENTER.
If the disc has not been put into any group, "NOT FILED" appears in the front panel display.

5 Turn the JOG dial until the group number you want (e. g., GROUP 1) appears in the front panel display.

6 Press ENTER to select the group.
The group file indication lights up in the front panel display and the flashing cursor (◀) appears to indicate the first space for the Group Memo.

7 Input the group name (Group Memo) following Steps 4 through 6 in "Labeling discs with disc titles" on page 23.

8 Press INPUT to store the Group Memo.

Erasing the Group Memo

1 Follow Steps 1 through 4 in "Putting discs into groups" to select the Group Memo you want to erase.

2 Press CLEAR.

3 Press INPUT.

Playing discs in a group (Group Play)

You can enjoy Continuous or Shuffle Play within a group.

1 Press CONTINUE or SHUFFLE to select the play mode you want before you start playing.

When you select	The player plays
ALL DISCS Continuous Play	All tracks on all discs in the group consecutively
1 DISC Continuous Play	All tracks on the specified disc in the group consecutively
ALL DISCS Shuffle Play	All tracks on all discs in the group in random order
1 DISC Shuffle Play	All tracks on the specified disc in the group in random order

2 Press one of the GROUP 1–8 buttons to select the group and press ▷.
Group Play starts from the disc which is the most upward number and located closest to the playing position. If the disc at the playing position is put into the selected group, the play starts from that disc.

You can specify the first disc to play when starting Group Play
After selecting the group, turn the JOG dial to select the disc, then press ENTER.

You can start Group Play using the remote
Before you start playing, press GROUP/DEL, the number button of the group you want to play, then ENTER.

Note
If "NO ENTRY" appears in the front panel display, no disc has been put into the selected group.

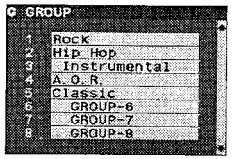
Deleting discs from a group

- To delete a disc from a group
  1 Follow Steps 1 through 4 in "Putting discs into groups" on page 26 to select the disc.
  2 Turn the JOG dial (when using the remote, press ← repeatedly) until "NOT FILED" appears in the front panel display, then press ENTER.
  3 Press INPUT.
- To delete all discs from a group at once
  Press one of the GROUP 1–8 buttons you want to clear, then press CLEAR for more than one second.

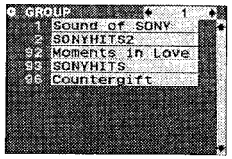
Checking the Group File information using the on-screen display

You can check the Group Memos and disc titles stored in each group.

Checking the Group Memos
Press GROUP/DEL.
The on-screen display shows all the Group Memos.



Checking the disc titles in each group
After pressing GROUP/DEL, press the number button of the group you want.

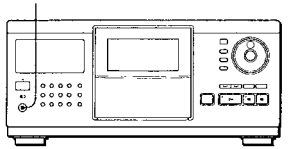


Storing Custom File Information Using a Keyboard

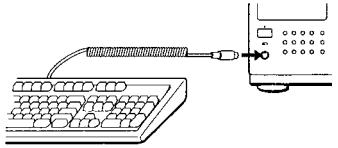
You can store the Disc Memo and Group File for one disc sequentially using an IBM-compatible PC keyboard* for USA (not supplied).

* Power consumption must be 120 mA or less.

Keyboard jack



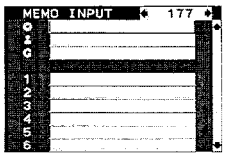
1 Connect a keyboard to the keyboard jack on the front panel of the player.



2 After selecting the disc you want on the player, press the Enter key.

3 Press the cursor keys (↑/↓) to select the item you want (disc title, artist name, group file or track title).

- **When you select ARTIST NAME**
  "New Artist" appears in the on-screen display. Press the ENTER key and go to Step 4.
  If the same artist name has been assigned to other discs, press the cursor keys (←/→) repeatedly until the artist name you want appears in the on-screen display, then press the ENTER key. In this case, skip Step 4.
- **When you select GROUP FILE**
  Press the cursor keys (←/→) until the group number you want appears in the on-screen display, then press the ENTER key.



4 Input the characters you want, then press the ENTER key.
To input the other information, repeat Steps 3 and 4.

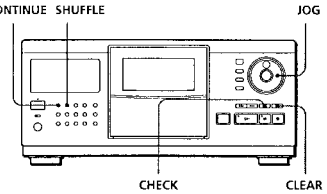
5 Press the Esc key to store the information.

You can delete all characters of selected item
While holding down the Shift key, press the Delete key.

Notes
- If the cursor keys do not work correctly and you cannot complete the task using the keyboard, disconnect the keyboard then reconnect it to the player.
- If the keyboard is not the USA model, the characters may be input differently from those on the keys.

Storing Specific Tracks (Delete File)

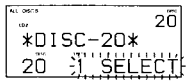
You can delete unwanted tracks and store only the tracks you want. When you select the disc containing a Delete File, you can play only the remaining tracks.



1 Press CONTINUE or SHUFFLE before you start playing.

2 Turn the JOG dial to select the disc.

3 Press CHECK repeatedly until the track you want to delete appears in the front panel display.



4 Press CLEAR.
"DELETE FILE" appears, and "DELETE" flashes in the front panel display.

If you want to recover the track, press CLEAR again.

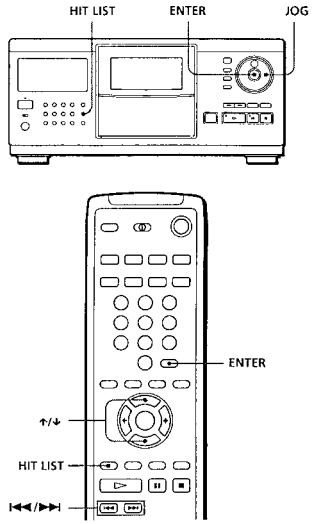
5 Repeat Steps 3 and 4 to delete more tracks.

You can recover all the tracks you have deleted
Press CHECK, then hold down CLEAR until "ALL SELECT" appears in the front panel display.

Note
The deleted tracks are skipped even in the Shuffle or Program Play mode (when the whole disc containing a Delete File is programmed as one step).

Storing Your Favorite Tracks (Hit List)

You can store the tracks you play frequently and select those tracks immediately by checking the track numbers or titles (see page 24) in the Hit List. You can put up to 50 tracks in the Hit List.



Putting tracks into the Hit List

Press HIT LIST while playing your favorite track. "LIST IN" appears in the front panel display.

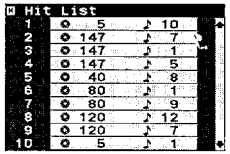
Playing tracks in the Hit List

1 Press HIT LIST before you start playing. "HIT LIST " appears in the front panel display.

2 Turn the JOG dial or press I◄◄/►►I until the track you want appears in the front panel display. When using the remote, press ↑/↓.

3 Press ENTER to start playing the track.

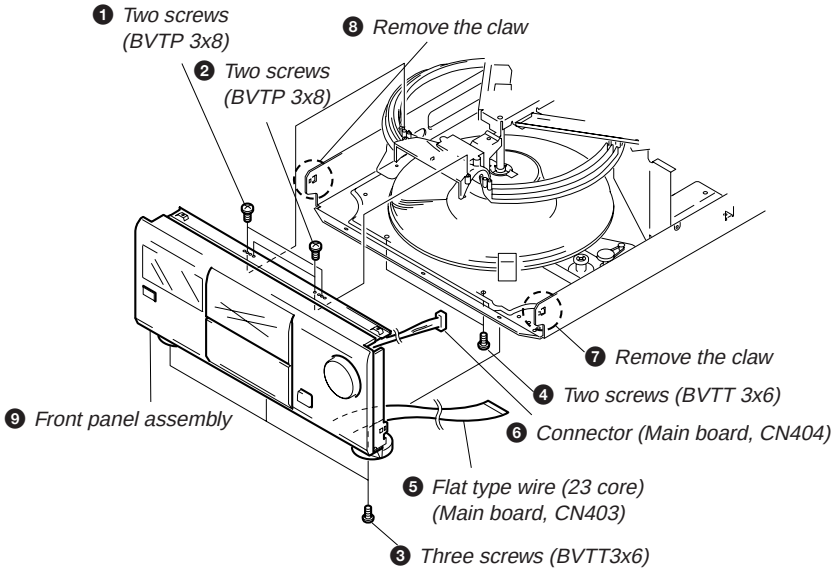
You can check the tracks in the Hit List using the on-screen display
When you press the HIT LIST button, the on-screen display shows the tracks in the Hit List.



Notes
- You cannot arrange the order of the tracks in the Hit List.
- The track you select in Step 2 will be listed as the first track in the Hit List.
- If you input the 51st track into the Hit List, the 50th track will be replaced.

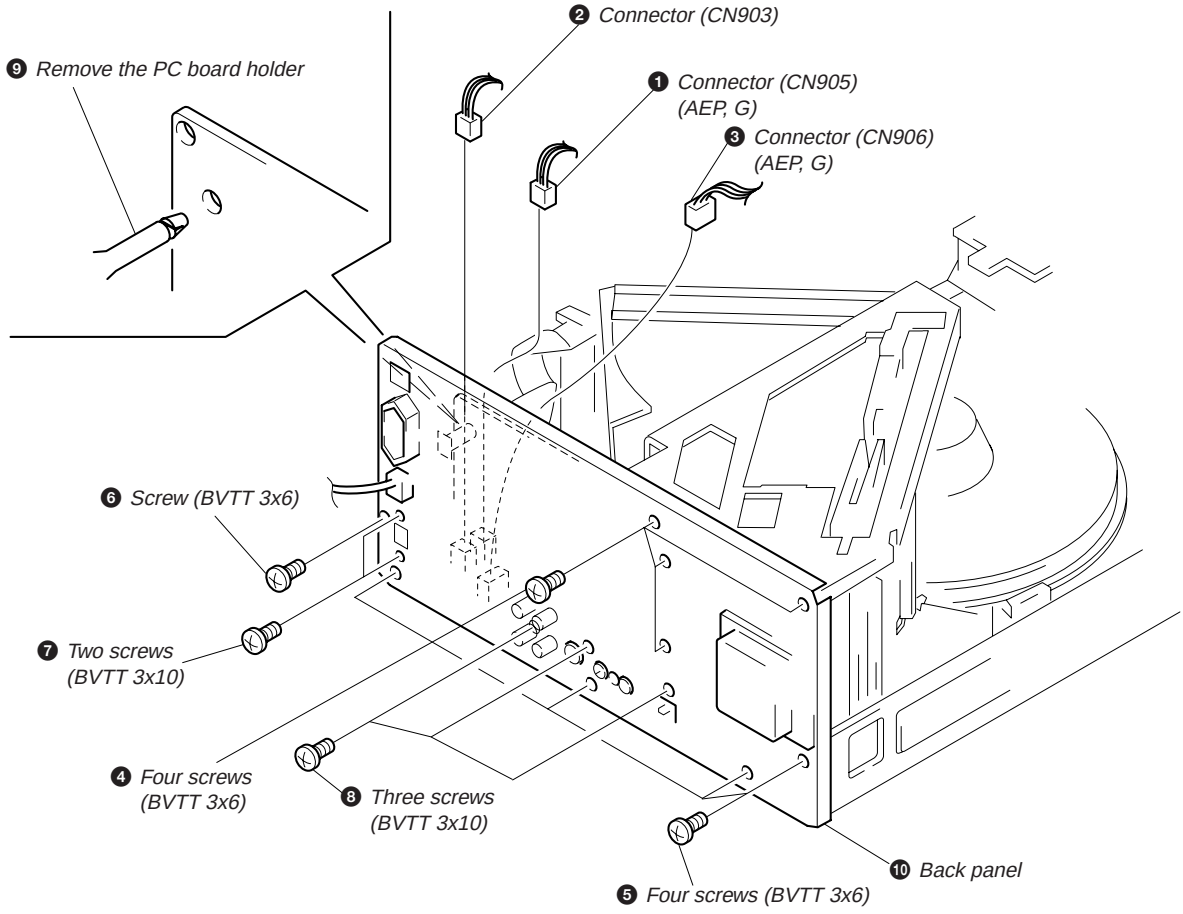
SECTION 3
DISASSEMBLY

3-1. FRONT PANEL ASSEMBLY

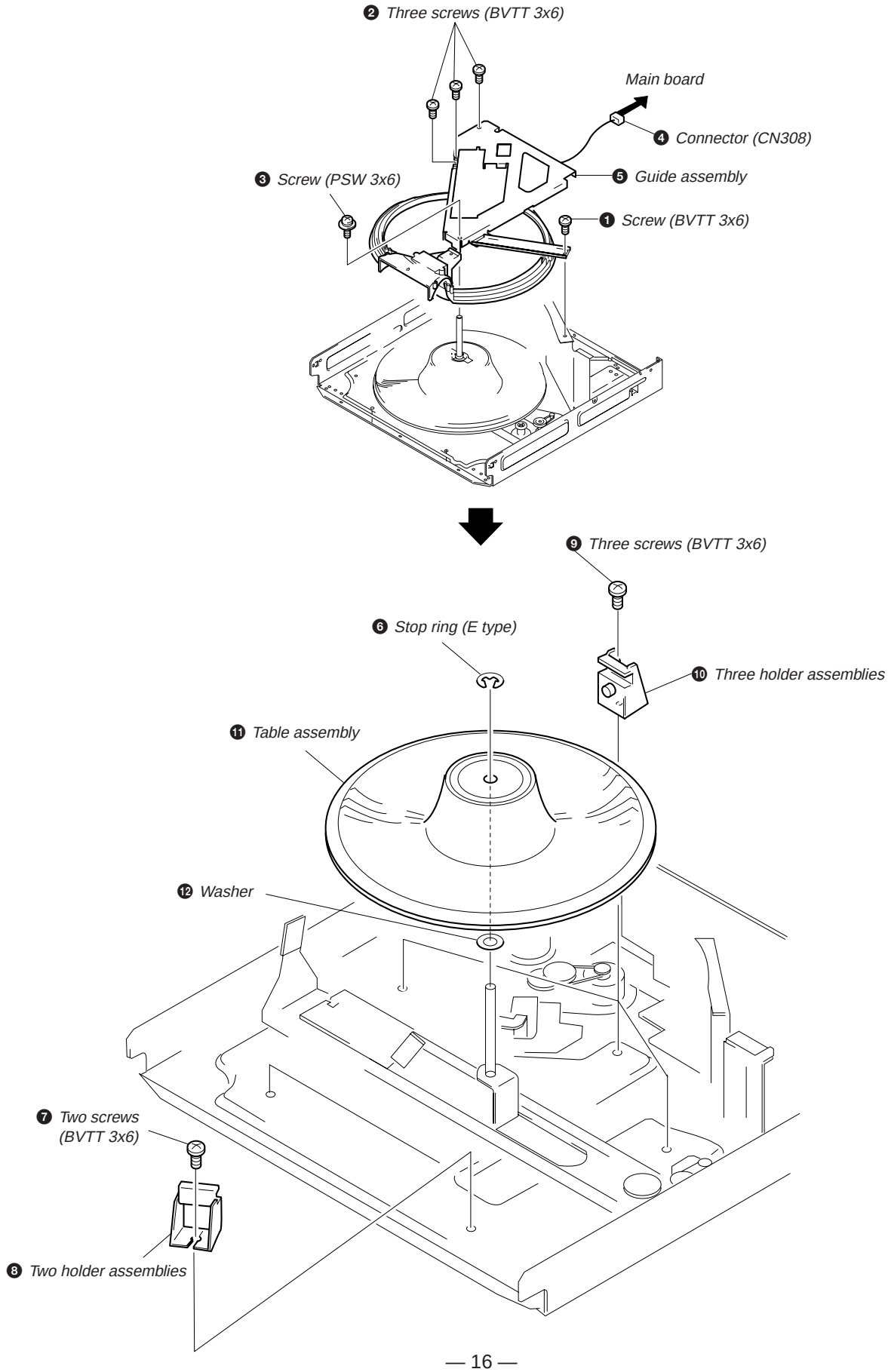

❶ Two screws (BVTP 3x8)
❽ Remove the claw
❷ Two screws (BVTP 3x8)
❼ Remove the claw
❹ Two screws (BVTT 3x6)
❾ Front panel assembly
❻ Connector (Main board, CN404)
❺ Flat type wire (23 core) (Main board, CN403)
❸ Three screws (BVTT3x6)

3-2. BACK PANEL ASSEMBLY

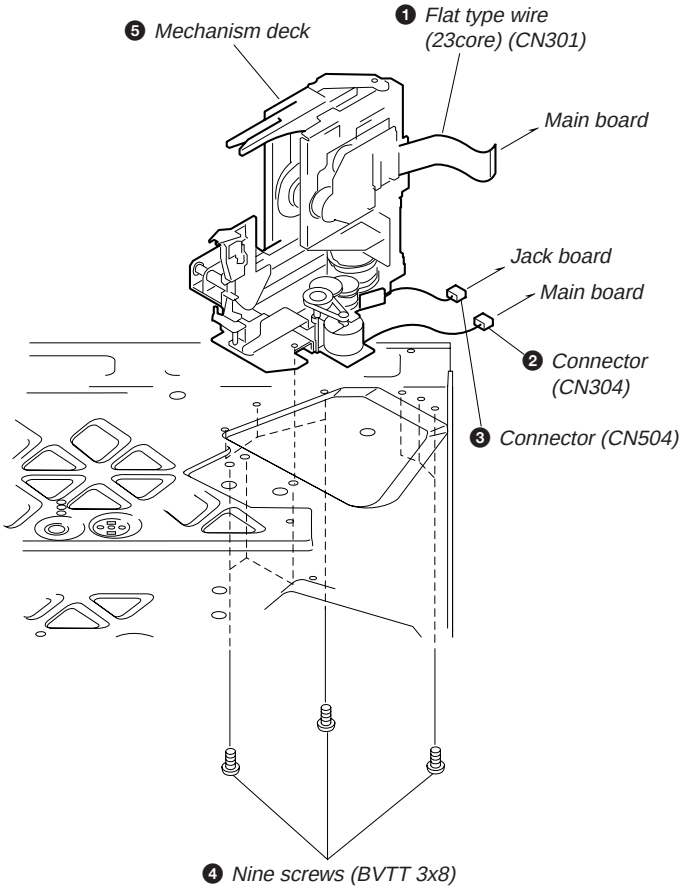
Note Abbreviation
G : German model


❷ Connector (CN903)
❾ Remove the PC board holder
❶ Connector (CN905) (AEP, G)
❸ Connector (CN906) (AEP, G)
❻ Screw (BVTT 3x6)
❼ Two screws (BVTT 3x10)
❹ Four screws (BVTT 3x6)
❽ Three screws (BVTT 3x10)
❿ Back panel
❺ Four screws (BVTT 3x6)

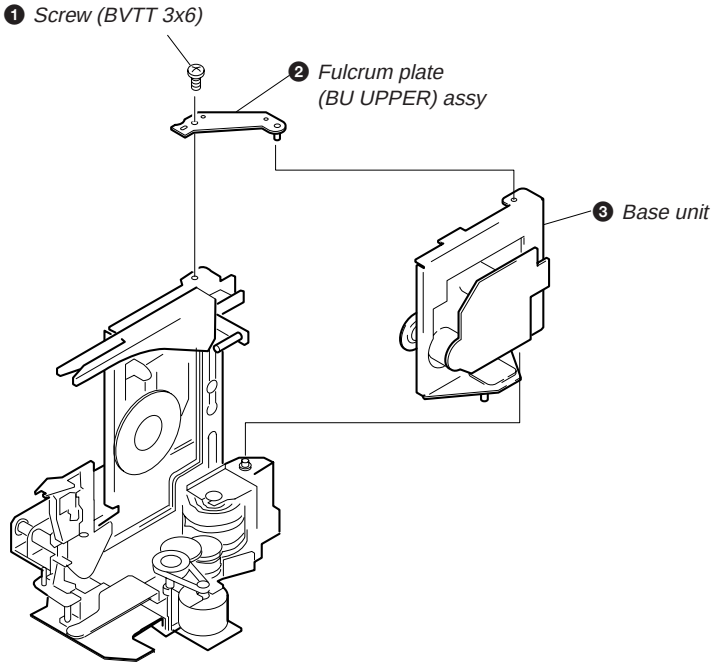
3-3. TABLE ASSEMBLY



3-4. MECHANISM DECK



3-5. BASE UNIT



SECTION 4
TEST MODE

4-1. Display Check Mode

With the power turned off (standby state), press the POWER button while pressing the ❚❚ (pause) button.
All FL segments and grids light up together with the ▷ (play), ❚❚ (pause), and standby LEDs.
At the same time, the GROUP LEDs are lights up simultaneously.

Note: To exit this mode, press the POWER button.

4-2. ADJ Mode

1. Turn ON the power of the unit, set disc to disc table, and perform chucking.
2. Disconnect the power supply plug from the outlet.
3. To set ADJ mode, connect the test point (ADJ) of the MAIN board to Ground, and connect the power supply plug to the outlet.

The power will turn on automatically, and the first track will be played. In this mode, table rotation and loading operations are not performed because it is taken that the disc has already been chucked.

Note: The same operations are also performed in the following when the test point (ADJ) is connected to Ground after turning on the power.

- Direct search (movement of sledding motor) is not performed during accessing
- Ignored even when GFS becomes L
- Ignored even when the Q data cannot be read
- Focus gain does not decrease
- Spindle gain does not decrease
- Servo related settings can be set manually and checked (Refer to ADJ Mode Special Functions Table)

ADJ Mode Special Functions Table
(The buttons shown with ( ) function by using the supplied remote commander only)

Button	Function
CONTINUE	Servo average display Displays VC, FE, RF, TE and traverse in hexadecimal numbers
SHUFFLE	Focus bias display Each time this is pressed, the focus bias is switched between 1 and 2 (1) Bias actually set Optimum bias Minimum jitter (2) U:Upper aliasing bias L:Lower aliasing bias
PROGRAM	Auto gain display Displays focus, tracking, sledding in hexadecimal numbers
GROUP 1 (1)	Increases the focus bias in 8 steps.
GROUP 2 (2)	Sets the focus bias in the middle of aliasing.
GROUP 3 (3)	Turns off the tracking and sledding servo
GROUP 4 (4)	Returns the auto gain to the initial value (30)
GROUP 5 (5)	Turns off the focus servo
GROUP 6 (6)	Decreases the focus bias in 8 steps.
GROUP 7 (7)	Re-adjusts the focus bias
GROUP 8 (8)	Turns on the tracking and sledding servo
(9)	Switches the focus servo gain between normal and down FG. norm: normal, FG. down: down
(10/0)	Sets the focus bias to 0 (no bias) Next, displays the jitter measured at the focus bias set
CHECK	S-curve observation mode
CLEAR	Automatic eccentric measurement The results of measurement is displayed in µm directly.

4-3. Key and Display Check Mode

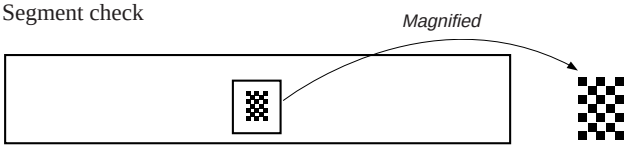
To set this mode, connect the test point (AFADJ) on the MAIN board to Ground, and connect the power supply plug to the outlet.

- All FL segments and grids will light up. (All lit check)
  When a button is pressed, the types of buttons pressed until then will be displayed on the left side and the number of the buttons will be displayed on the right side. However, these will not be displayed for the following special buttons.

■(stop) button: FL segment check
(Refer to FL Tube Check Patterns)
❚❚(pause) button: FL grid check (Refer to FL Tube Check Patterns)
The pause LED also lights up simultaneously.
▷(play) button: All FL segment and grid will light up.
The play LED also lights up simultaneously.

FL Tube Check Patterns

Segment check



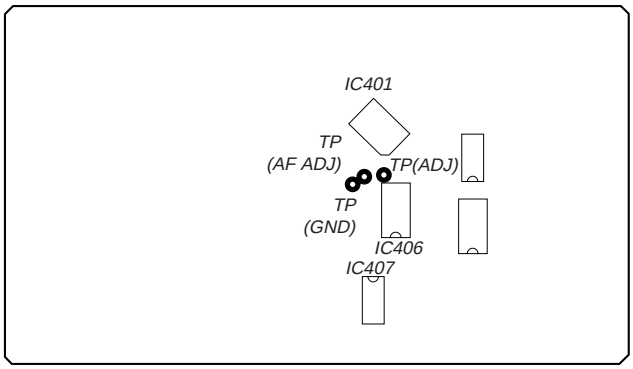
Grid check

- When the jog dial is rotated to the right, the GROUP LEDs light up in the order of 1→2..8→1.
- When the jog dial is rotated to the left, the GROUP LEDs light up in the order of 8→7..1→8.

- The standby LED lights up when the door switch is shut.

- Abbreviation
  FL: Fluorescent Indicator Tube

[MAIN BOARD] — Component Side —

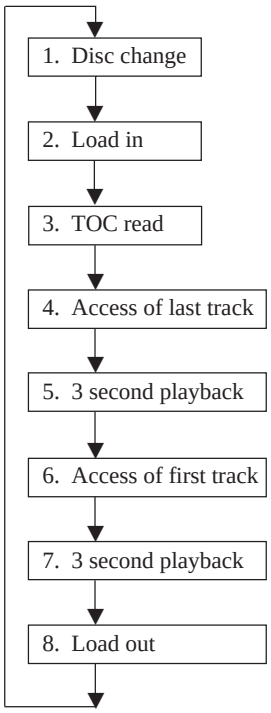


4-4. Aging Mode

Aging Mode

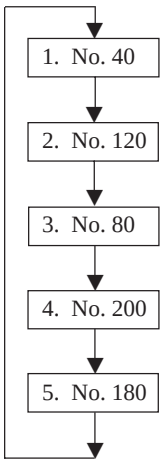
- Mode which repeatedly changes and plays back discs automatically in the unit.
- It will repeat aging as long as no errors occur.
- If an error occurs during aging, it will stop all servos, motors, etc. instantaneously, display the error number, and stop operations. However, the stopping conditions differ according to whether the unit is equipped with the "self-protection function during errors" described later.
  The function serves to maintain the state of the unit when errors occur.

Sequence of Aging Mode



Order of Disc Change

(1 cycle takes 3 minutes)



Special Aging Mode Functions

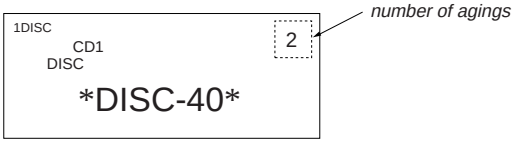
The aging mode is provided with the following convenient functions

- Disc setting mode (*1)
- Selection of presence of protection function during error (*2)
- Count function of aging cycle (*3)

*1 Disc setting mode:
5 discs are set before setting the aging mode. This mode makes the setting of these discs more easy.

*2 Self protection function during errors:
Function which voluntarily corrects errors which occur during normal operations by retries.
If this function is not provided, all operations will be stopped without retiring. It is suitable for checking errors with low reproducibility.
If this function is provided, and errors can be corrected by retries, aging will be continued without stopping.

*3 Aging cycle count function:
Functions which displays the number of agings carried out on the Fluorescent indicator tube in numbers. One aging cycle consists of five discs.



Aging Method

1. Turn ON the power of the unit. Open the front cover.
2. Press the AGING START button of the remote commander for aging mode (J-2501-123-A).
3. When the disc set mode is set, the ► and ❚❚ LEDs blink.
4. Rotate the JOG dial. The slits (No. 40, 80, 120, 160, 200) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
5. Set whether the self-protection function during errors is equipped with the unit. Press the REPEAT button. If "REPEAT" is displayed on the Fluorescent indicator tube, it means the function is provided. If "REPEAT" is not displayed, it means the function is not provided.
6. Press the ► button.
7. The ► LED blinks, the aging mode is set, and aging is started.
8. The aging cycle lasts 3 minutes. If errors occur during aging, the error number will be displayed on the Fluorescent indicator tube. (Refer to the following table for the details of the errors.)
9. Aging will be repeated as long as no errors occur.
10. After each aging cycle, the number displayed on the Fluorescent indicator tube will increase.
11. To end aging, press the POWER button

Error Display

120 Err01

Disc number Error code

Error code

Code number	Name	Contents
Err 01	DISC sensor check 1	No disc in the specified slit
Err 02	DISC sensor check 2	Disc in other slits
Err 03	Table operation check 1	Table motor current over
Err 04	Table operation check 2	No table sensor input
Err 05	Loading operation check 1	Load in timeover
Err 06	Loading operation check 2	Load out timeover
Err *1	BU related check 1	Access timeover
Err *2	BU related check 2	High speed search NG
Err *3	BU related check 3	Q data read error
Err *4	BU related check 4	BU operation (from focus search to until signal can be read) timeover
Err *5	BU related check 5	GFS monitor error
Err *6	BU related check 6	Focus cannot be imposed by focus search
Err *7	BU related check 7	Auto focus bias adjustment cannot be performed

The * numbers mean the following according to the state of the unit during aging

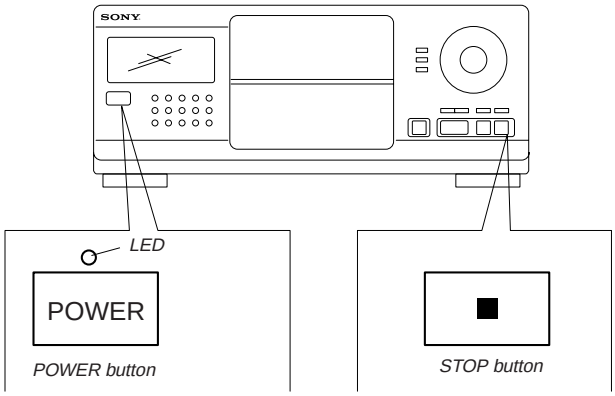
2 : From chucking to end of TOC read
3 : From end of TOC read to end of last track playback
4 : From end of last track playback to end of first track playback

SECTION 5
ADJUSTMENTS

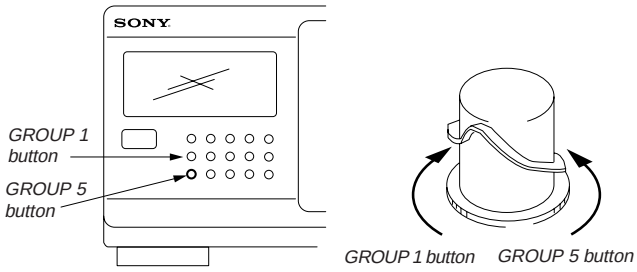
5-1. MECHANICAL ADJUSTMENT

Perform the following steps before carrying out adjustments.

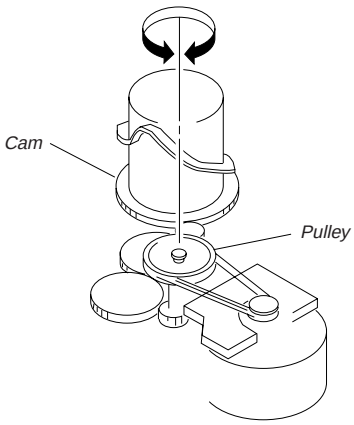
1. Turn ON the power of the unit, set disc to disc table No. 92, and perform chucking.
2. Turn OFF the power.
3. Remove the case.
4. While pressing the STOP button, turn ON the POWER button. The test mode is set.
5. The POWER button LED starts blinking. (Test mode)



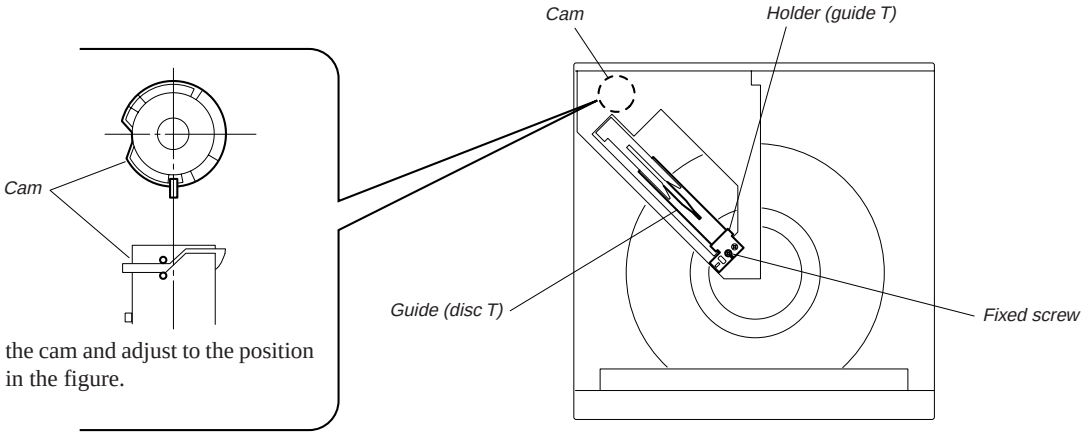
NOTE 1: The cam will start rotating when the GROUP 1 or GROUP 5 button is pressed continuously in the test mode.



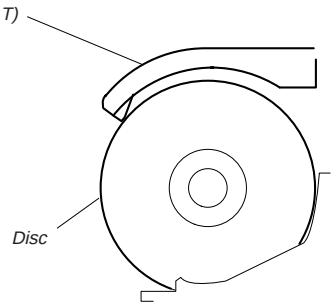
NOTE 2: If the power cannot be supplied, the cam can be rotated by rotating the pulley with your finger.



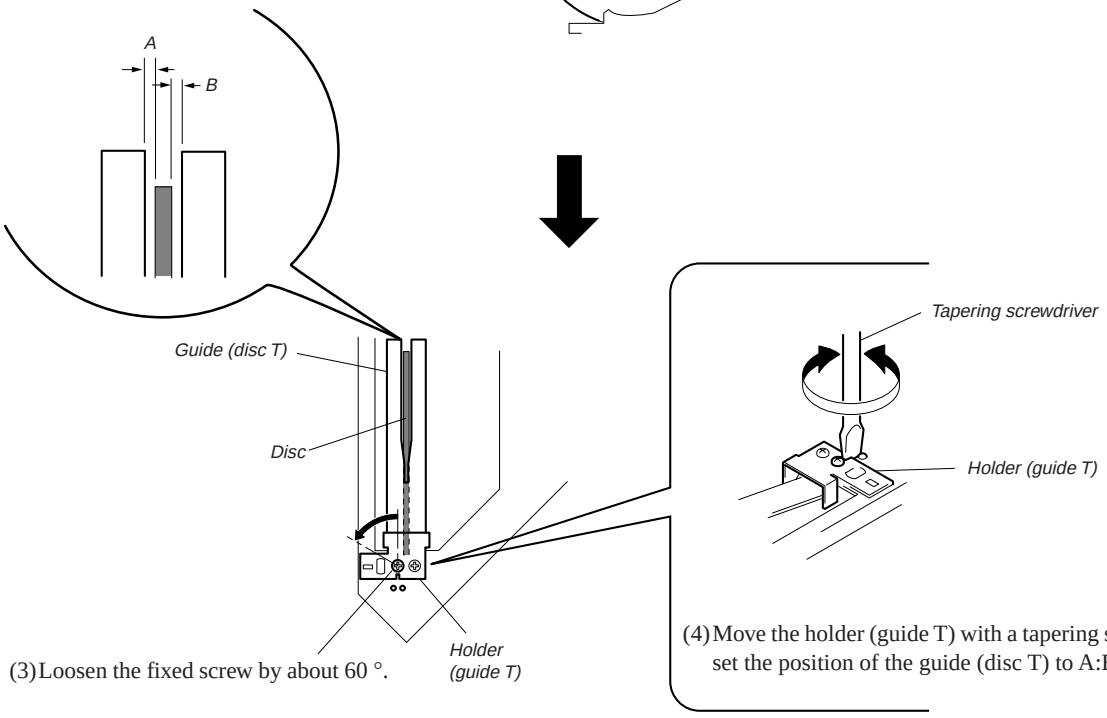
GUIDE (DISC T) ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



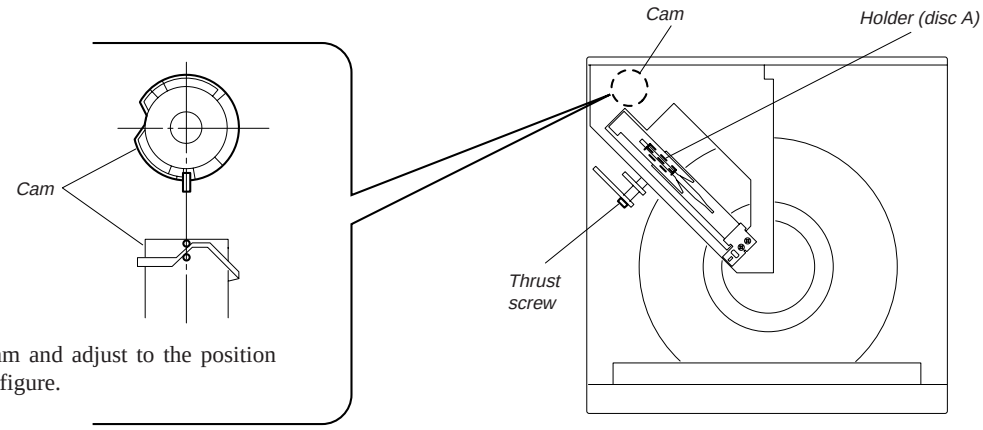
(2) Check that the state is as shown in the figure.



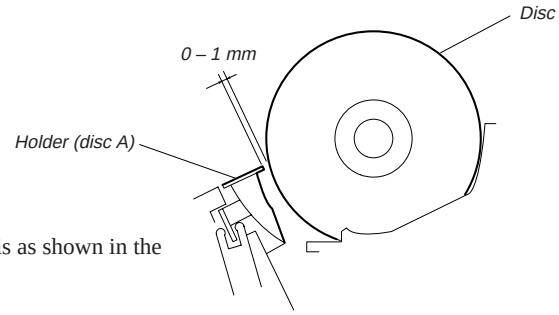
(3) Loosen the fixed screw by about 60 °.

(4) Move the holder (guide T) with a tapering screwdriver, and set the position of the guide (disc T) to A:B=1:1.

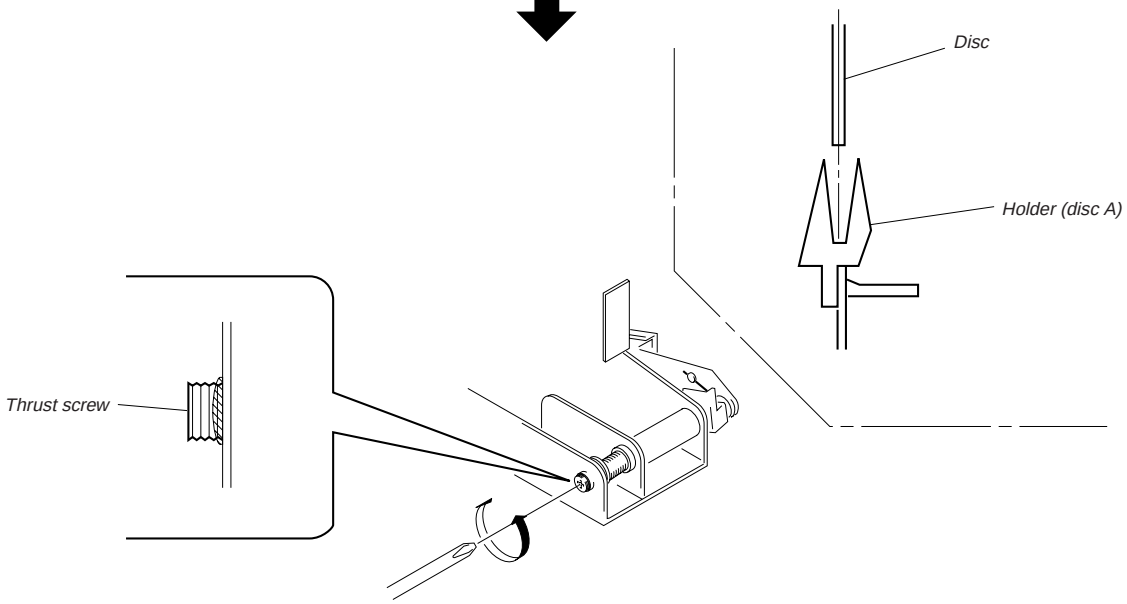
HOLDER (DISC A) ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



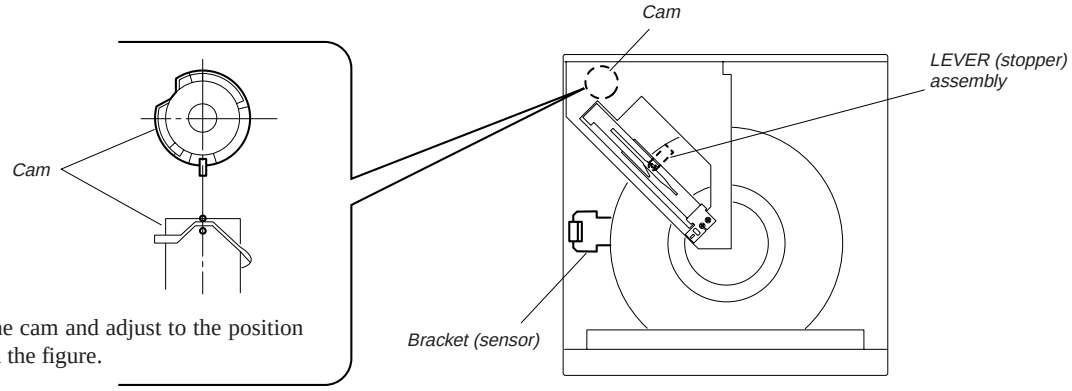
(2) Check that the state is as shown in the figure.



(3) After applying suitable locking compound to the ▨ part, rotate the thrust screw until the holder (Disc A) comes to the center of the disc.

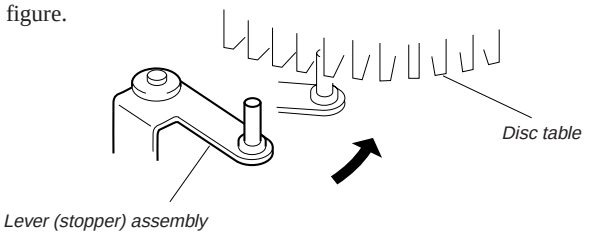
SENSOR ALIGNMENT

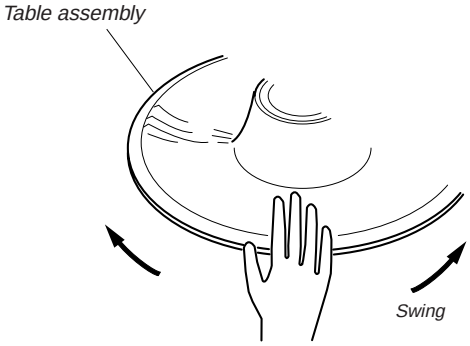
Perform this adjustment after the “holder (disc A) adjustment”.
If the disc table swings to the left and right just before the disc is chucked, perform the following adjustment.



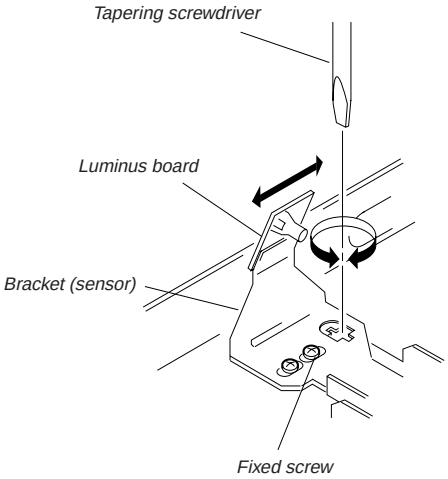
(1) Rotate the cam and adjust to the position shown in the figure.

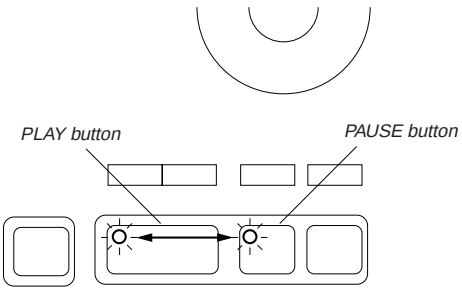
(2) Check that the lever (stopper) assembly secures the disc table as shown in the figure.





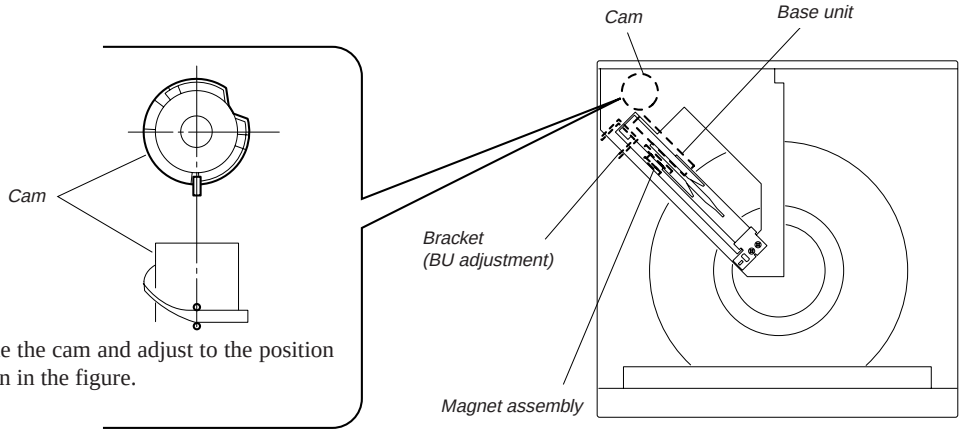
(4) Moving the disc table right and left with a hand after the screw is fixed, the table will move by the play of a disc table. If the LEDs light up alternately, the adjustment will be performed correctly.





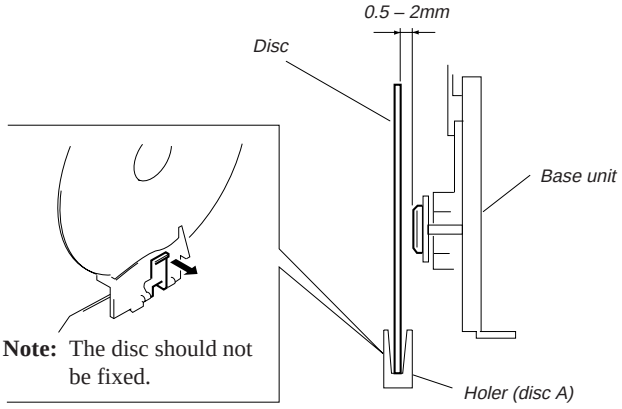
(3) Loosen the fixed screw by 60° to 90°, and use a tapering screwdriver to adjust the screw as shown in the figure.
Move the bracket (sensor) with the tapering screwdriver little by little, and fix the fixed screw at where the play button's LED (green) is switched to the pause button's LED (orange) (or its reverse).

PULLY AND DISC CENTER HOLE ALIGNMENT

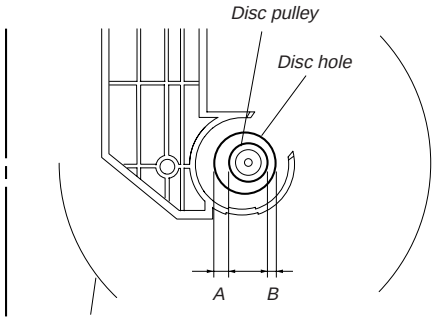


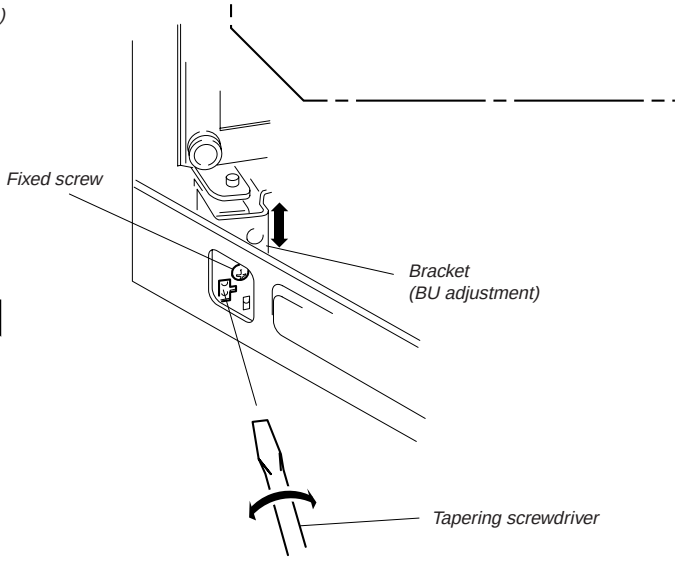
(1) Rotate the cam and adjust to the position shown in the figure.

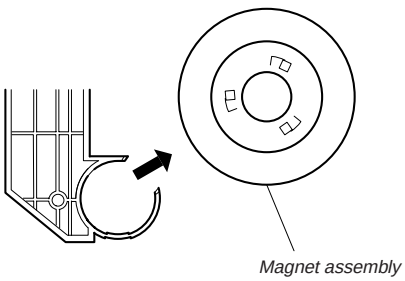
(2) Check that the state is as shown in the figure.



Note: The disc should not be fixed.



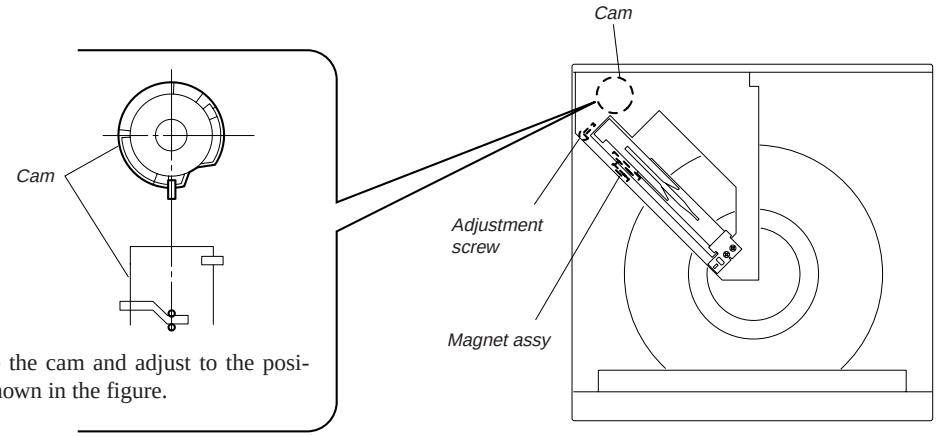




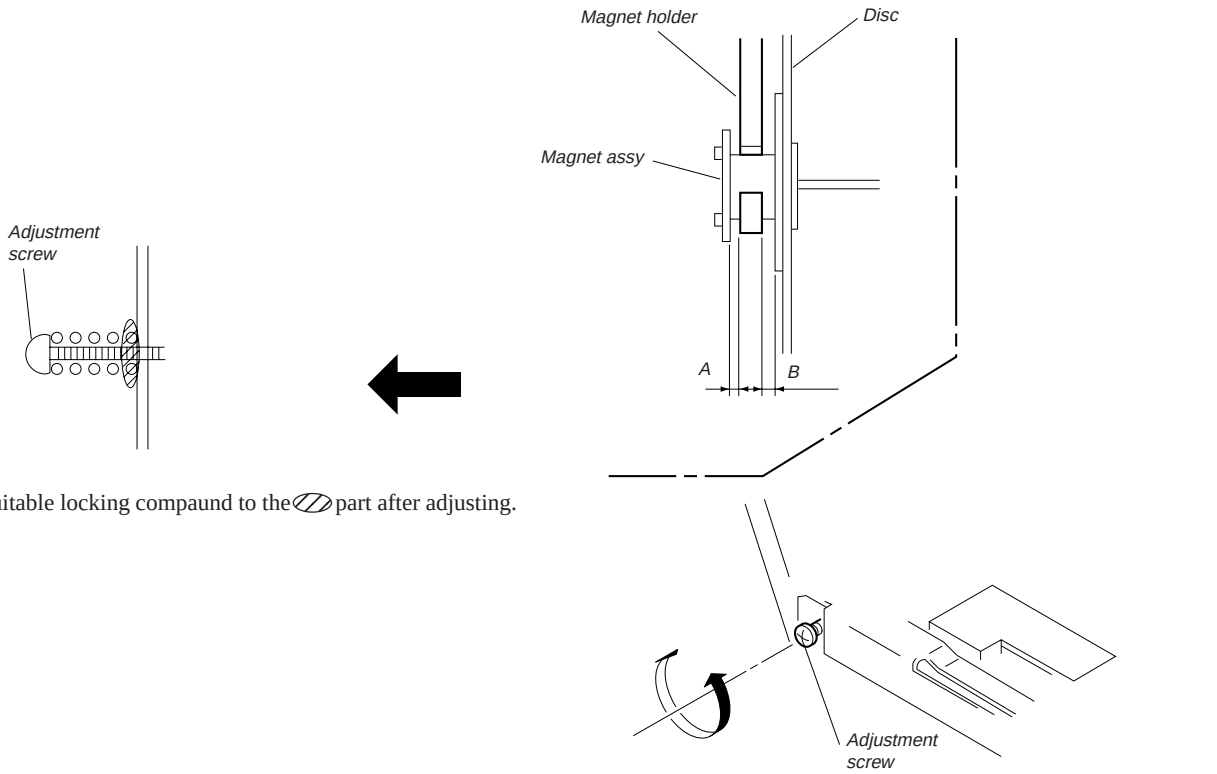
(3) Remove the Magnet assembly.

Loosen the fixed screw by 60° to 90°, and move and adjust the bracket (BU adjustment) up and down using a tapering screwdriver so that the positions of the disc hole and disc pulley become A=B or between A:B=2:1 and 1:2.

MAGNET ASSY ALIGNMENT



(1) Rotate the cam and adjust to the position shown in the figure.



(2) Rotate the adjustment screw until A=B or between A:B=2:1 and 1:2

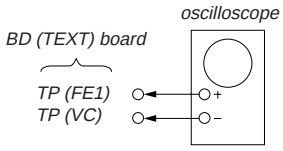
(3) Apply suitable locking compaund to the ▨ part after adjusting.

5-2. ELECTRICAL BLOCK CHECKING

Note:

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

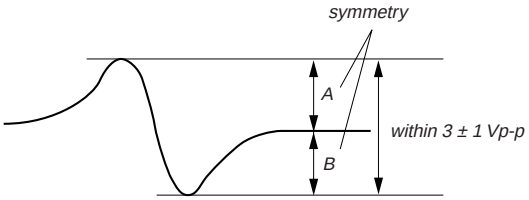
S-Curve Check



Procedure :

1. Connect oscilloscope to test point TP (FE1) on BD (TEXT) board.
2. Connect test point TP (ADJ) on MAIN board to ground with lead wire.
3. Turn Power switch on to set the ADJ mode.
4. Put disc (YEDS-18) in and playback.
   Press the CHECK button.
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3±1 Vp-p.

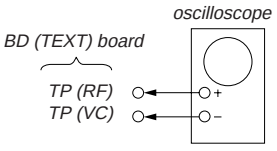
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

RF Level Check

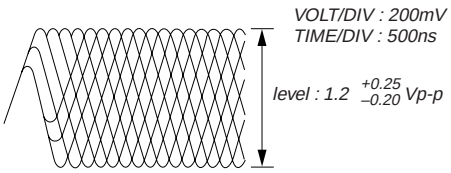


Procedure :

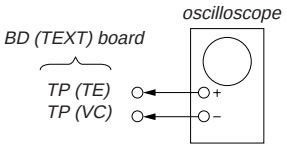
1. Connect oscilloscope to test point TP (RF) on BD (TEXT) board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform



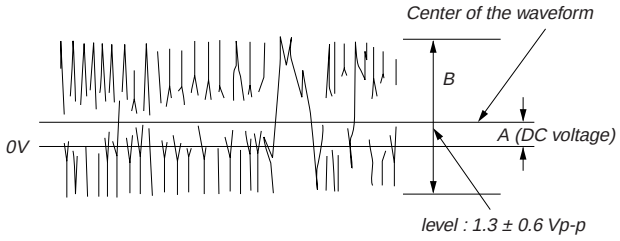
E-F Balance Check



Procedure :

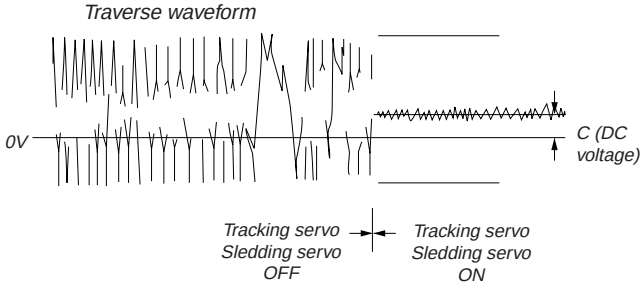
1. Connect oscilloscpe to test point TP (TE) on BD (TEXT) board.
2. Connect the test point TP (ADJ) on MAIN board to the ground with a lead wire.
3. Turn the Power switch on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the "GROUP 3" button. (The tracking servo and the sledding servo are turned OFF.)
6. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 22%

Traverse waveform



7. Press the "GROUP 8" button. (The tracking servo and sledding servo are turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 6.

Traverse waveform

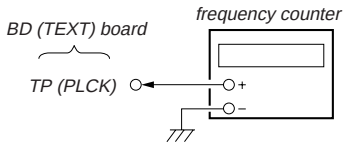


8. Disconnect the lead wire of TP (ADJ) connected in step 1.

RF PLL Free-run Frequency Check

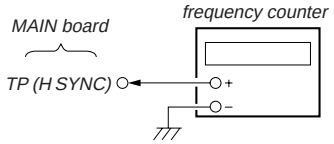
Procedure :

1. Connect frequency counter to test point TP (PLCK) with lead wire.



2. Turn Power switch on.
3. Put the disc (YEDS-18) in to play the number five track.
   Confirm that reading on frequency counter is 4.3218MHz.

H Sync Adjustment

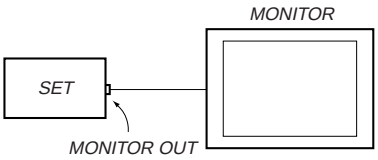


Procedure :

1. Connect the test points TP (TEST) and TP (GND) on MAIN board with a lead wire. And Connect the frequency counter to the test point TP (H SYNC).
2. Turn power switch on.
3. Adjust C506 so that the reading of frequency counter becomes the adjustment value.
4. Disconnect the lead wire connected in step 1.

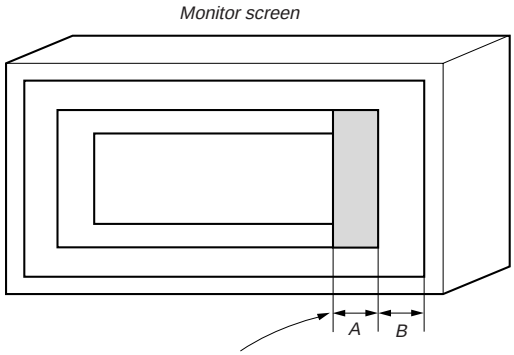
Adjustment value : NTSC : 3.579545 MHz ± 10Hz
PAL : 4.433618 MHz ± 10Hz

OSD Screen Width (V SYNC) Adjustment



Procedure :

1. Press the POWER button while pressing the ■ (STOP) button. The screen display is the screen for adjusting the width of the OSD screen.
   The position of the OSD screen set by the user will be cleared to the center of the screen, which is the setting at shipment.
2. Adjust C510 so that the space on the right of the screen (width B) is the same width as the orange frame on the right of the adjustment screen (width A). (This adjustment takes into consideration extra space for deviations caused by the monitors.)
3. Press the POWER button after completing the adjustment.

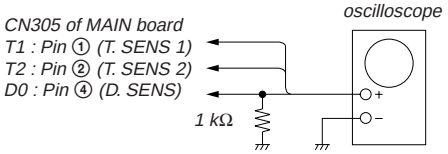


Adjust C510 so that width of the Orange frame (A) at the right of the screen is the same as the width of space (B) of the monitor screen.

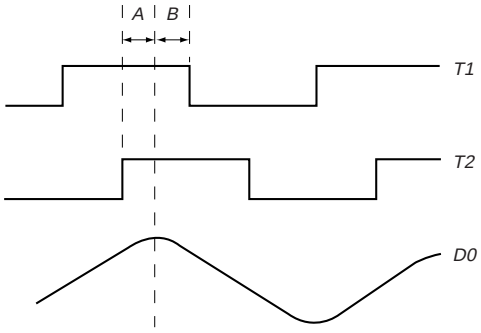
Disc Sensor Adjustment

Perform this adjustment after completing all adjustments of the mechanism section.
If not performed accurately, the presence of the disc may not be detected properly.

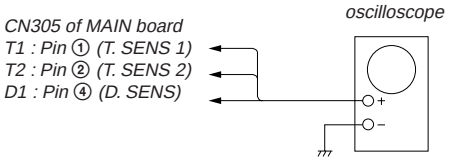
Connection 1:



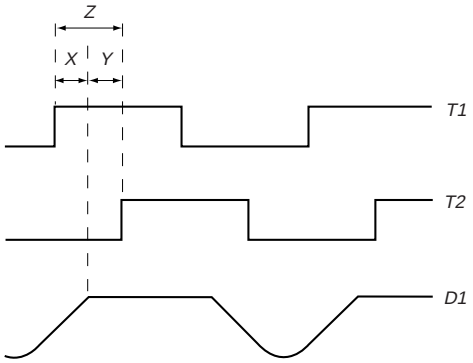
Waveform 1:



Connection 2:

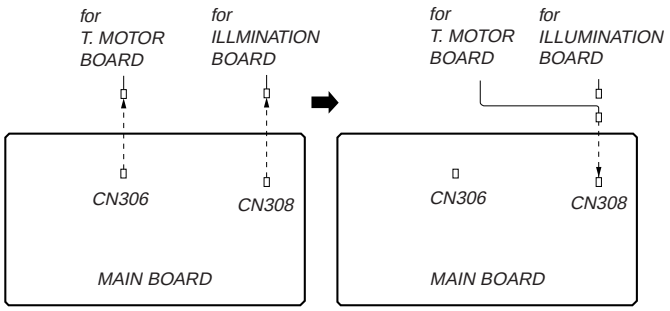


Waveform 2

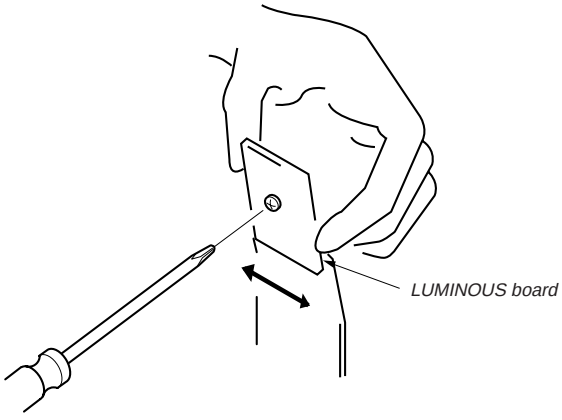


Procedure:

1. Connect the oscilloscope to Pins ①, ②, and ④ of CN305 of the MAIN board. Also connect a 1 kΩ resistor to Pin ④ at the same time. (Connection 1)
2. Disconnect the CN308 (2P) and CN306 (2P) cables of the MAIN board. Connect the cables connected to CN306 (connected to the T. MOTOR board) to CN308 .

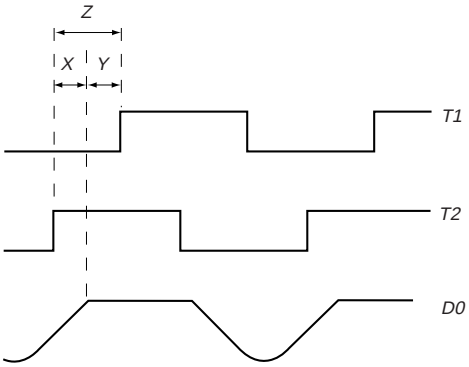


3. Open the front cover. (If closed, malfunctions by incorrect operations may result.)
4. Check that no discs are loaded in the unit, and press the POWER button to turn ON the power.
5. The rotary table will continue rotating in the clockwise direction.
6. Observe the waveform at that time on the oscilloscope.
7. Loosen the screw securing the LUMINOUS board slightly.
8. Slide the LUMINOUS board to the left and right so that the peak of the D0 waveform is at the center between the descending point of the T1 waveform and ascending point of the T2 waveform. (Waveform 1) After adjusting, apply locking compound.



9. Disconnect the resistor connected to Pin ④ of CN305 of the MAIN board. (Connection 2)
10. Observe the waveform on the oscilloscope. (Waveform 2)
11. Adjust RV401 of the MAIN board so that the waveform on the oscilloscope satisfies the following adjustment value 1.
12. Connect the connectors disconnected in Step 2 at their original positions.
13. Close the front cover, and rotate the JOG dial in the counterclockwise direction continuously so that the rotary table rotates continuously in the counterclockwise direction.
14. Observe the waveform on the oscilloscope and confirm that it satisfies the adjustment value 2 (waveform 3). If it does not, adjust RV401 of the MAIN board.

Waveform 3:



15. After the adjustment, load a disc only in slit 1, close the front cover, and press the POWER button to turn off the power.
16. Press the POWER button while pressing the ENTER button to turn on the power.
17. If the rotary table makes one round, and “YES” is displayed on the fluorescent indicator tube after it stops, it means that the adjustment has been performed properly.

Adjustment value 1:

At the shoulder part of waveform D1, T1 becomes H and T2 becomes L, and at the same time, the Y width must not be smaller than 1/4 of the Z width.

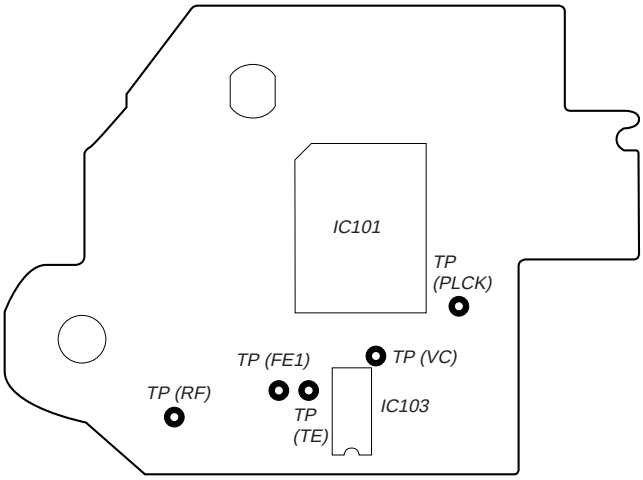
In order to satisfy this value more easily, adjust so that X=Y approximately and observe the deviation of the waveform.

Adjustment value 2:

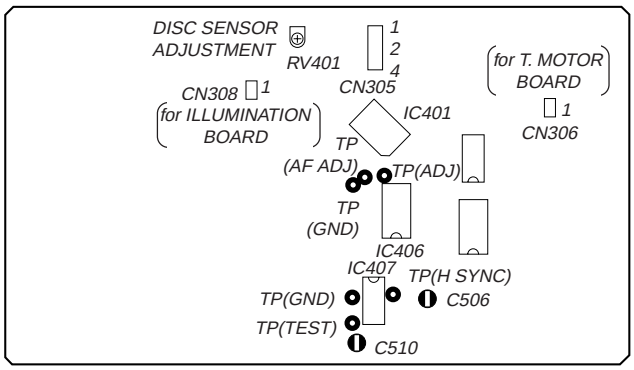
At the shoulder part of waveform D1, T1 becomes H and T2 becomes L, and at the same time, the Y width must not be smaller than 1/4 of the Z width.

Adjustment Location :

[BD (TEXT) BOARD] — Side B —

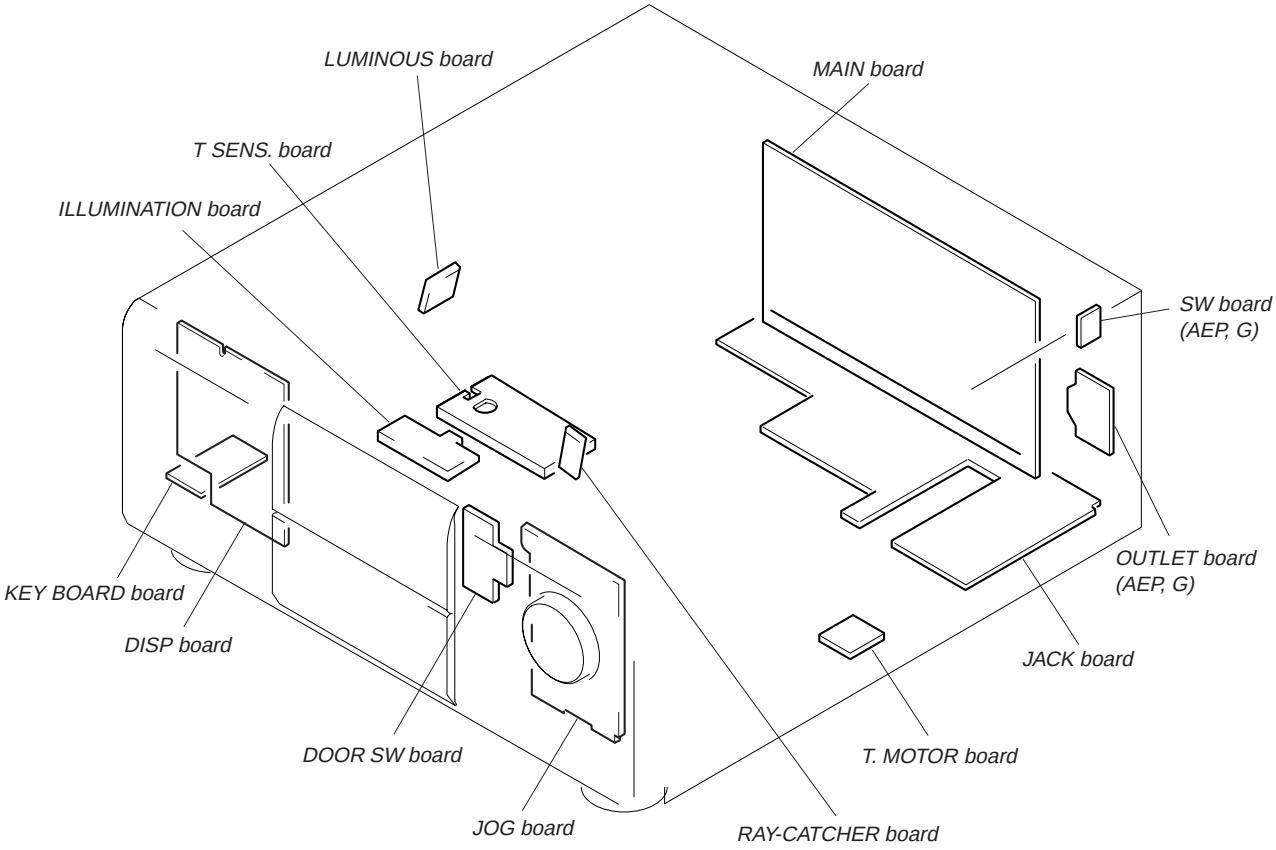


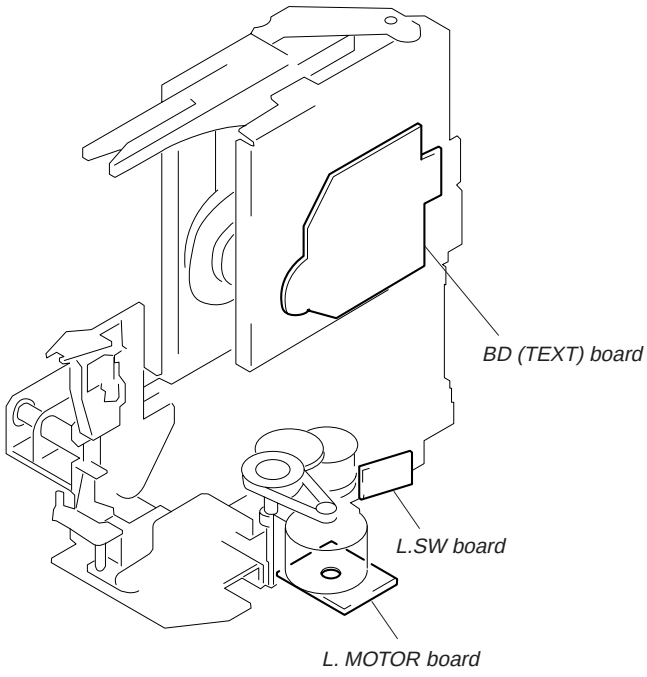
[MAIN BOARD] — Component Side —



SECTION 6
DIAGRAMS

6-1. CIRCUIT BOARDS LOCATION





6-2. IC PIN FUNCTIONS

• **IC101 DIGITAL SERVO, DIGITAL SIGNAL PROCESSOR (CXD2545Q)**

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled drive output (Open)
2	SRDR	O	Sled drive output
3	SFON	O	Sled drive output (Open)
4	TFDR	O	Tracking drive output
5	TRON	O	Tracking drive output (Open)
6	TRDR	O	Tracking drive output
7	TFON	O	Tracking drive output (Open)
8	FFDR	O	Focus drive output
9	FRON	O	Focus drive output (Open)
10	FRDR	O	Focus drive output
11	FFON	O	Focus drive output (Open)
12	VCOO	O	VCO output for analog EFM PLL (Open)
13	VCOI	I	VCO input from analog EFM PLL (Connected to Ground)
14	TEST	I	TEST pin connected normally to Ground (Connected to Ground)
15	DVss	–	Digital Ground
16	TES2	I	TEST pin connected normally to Ground
17	TES3	I	TEST pin connected normally to Ground
18	PDO	O	Charge-pump output for analog EFM PLL (Open)
19	VPCO	O	Charge-pump output for variable pitch PLL (Open)
20	VCKI	I	Clock input from variable pitch external VCO (Connected to Ground)
21	AVD2	–	Analog power supply
22	IGEN	I	Power supply pin for operational amplifiers
23	AVS2	–	Analog Ground
24	ADIO	I	(Open)
25	RFC	O	(Open)
26	RFDC	I	RF signal input
27	TE	I	Tracking error signal input
28	SE	I	Sled error signal input
29	FE	I	Focus error signal input
30	VC	I	Center voltage input pin
31	FILO	O	Filter output for master PLL
32	FILI	I	Filter input for master PLL
33	PCO	O	Charge-pump output for master PLL
34	CLTV	I	Control voltage input for master VCO
35	AVS1	–	Analog Ground
36	RFAC	I	EFM signal input
37	BIAS	I	Asymmetry circuit constant current input
38	ASYI	I	Asymmetry comparate voltage input
39	ASYO	O	EFM full swing output
40	AVD1	–	Analog power supply

• Abbreviation
EFM: Eight to Fourteen Modulation
PLL: Phase Locked Loop

Pin No.	Pin Name	I/O	Function
41	DV_{DD}	–	Digital power supply
42	ASYE	I	Asymmetry circuit ON/OFF (Connected to +5V)
43	PSSL	I	Audio data output mode selection input (Connected to Ground)
44	WDCK	O	48-bit slot D/A interface. Word clock. (Open)
45	LRCK	O	48-bit slot D/A interface. LR clock.
46	DATA	O	DA 16 output when PSSL=1. 48-bit slot serial data when PSSL=0
47	BCLK	O	DA 15 output when PSSL=1. 48-bit slot data when PSSL=0
48	64DATA	O	DA 14 output when PSSL=1. 64-bit slot data when PSSL=0 (Open)
49	64BCLK	O	DA 13 output when PSSL=1. 64-bit slot data when PSSL=0 (Open)
50	64LRCK	O	DA 12 output when PSSL=1. 64-bit slot data when PSSL=0 (Open)
51	GTOP	O	DA 11 output when PSSL=1. GTOP output when PSSL=0 (Open)
52	XUGF	O	DA 10 output when PSSL=1. XUGF output when PSSL=0 (Open)
53	XPLCK	O	DA 09 output when PSSL=1. XPLCK output when PSSL=0 (Open)
54	GFS	O	DA 08 output when PSSL=1. GFS output when PSSL=0 (Open)
55	PFCK	O	DA 07 output when PSSL=1. RFCK output when PSSL=0 (Open)
56	C2PO	O	DA 06 output when PSSL=1. C2PO output when PSSL=0 (Open)
57	XRAOF	O	DA 05 output when PSSL=1. XRA0F output when PSSL=0 (Open)
58	MNT3	O	DA 04 output when PSSL=1. MNT3 output when PSSL=0 (Open)
59	MNT2	O	DA 03 output when PSSL=1. MNT2 output when PSSL=0 (Open)
60	MNT1	O	DA 02 output when PSSL=1. MNT1 output when PSSL=0 (Open)
61	MNT0	O	DA 01 output when PSSL=1. MNT0 output when PSSL=0 (Open)
62	XTAI	I	X'tal oscillator circuit input
63	XTAO	O	X'tal oscillator circuit output (Open)
64	XTSL	I	X'tal selection input pin (Connected to Ground)
65	DVss	–	Digital Ground
66	FSTI	I	Clock input for digital servo block
67	FSTO	O	2/3 divider output of pins 62, 63
68	FSOF	O	1/4 divider output of pins 62, 63 (Open)
69	C16M	O	16.9344 MHz output (Open)
70	MD2	I	Digital-out ON/OFF control pin (Connected to +5V)
71	DOUT	O	Digital-out output pin
72	EMPH	O	Playback disc output in emphasis mode (Open)
73	WFCK	O	WFCK output
74	SCOR	O	Sub-code sync output
75	SBSO	O	Sub-P through Sub-W serial output
76	EXCK	I	Clock input for SBSO read-out
77	SUBQ	O	Sub-Q 80-bit output
78	SQCK	I	Clock input for SQSO read-out
79	MUTE	I	Muting selection pin
80	SENS	O	SENS output

• Abbreviation
WFCK: Wirte Frame Clock

Pin No.	Pin Name	I/O	Function
81	XRST	I	System reset
82	DIRC	I	Used in 1-track jump mode (Connected to +5v)
83	SCLK	I	SENS serial data read-out clock
84	DFSW	I	Defect selection pin (Connected to Ground)
85	ATSK	I	Input pin for anti-shock (Connected to Ground)
86	DATA	I	Serial data input, supplied from CPU
87	XLAT	I	Latch input, supplied from CPU
88	CLOK	I	Serial data transfer clock input, supplied from CPU
89	COUT	O	Numbers of track counted signal output (Open)
90	DVDD	–	Digital power supply
91	MIRR	O	Mirror signal output (Open)
92	DFCT	O	Defect signal output (Open)
93	FOK	O	Focus OK output (Open)
94	FSW	O	Output to select spindle motor output filter (Open)
95	MON	O	Output to control ON/OFF of spindle motor (Open)
96	MDP	O	Output to control spindle motor servo
97	MDS	O	Output to control spindle motor servo (Open)
98	LOCK	O	GFS is sampled by 460 Hz. H when GFS is H (Open)
99	SSTP	I	Input signal to detect disc inner most track
100	SFDR	O	Sled drive output

• Abbreviation
GFS: Guard Frame Sync

• **IC401 SYSTEM CONTROL (MB90677)**

Pin No.	Pin Name	I/O	Function
1	A16	O	Address terminal for external RAM/ROM
2	A17	O	Chip select
3	CE1	O	Chip select
4	CE2	O	Chip select
5	$\overline{\text{ADJ}}$	I	ADJ mode input pin
6	$\overline{\text{AF ADJ}}$	I	AFADJ mode input pin
7	—	O	Open
8	—	O	Open
9	ALE	O	Address latch enable
10	OE	O	Lower during read
11	DGND	–	Digital ground
12	WE	I	Write signal of data bus low order 8 bit
13	—	O	Open
14	SPDT	I	Data input from IC for CD-TEXT (LC89170M)
15	CLK-T	O	Clock output to IC for CD-TEXT (LC89170M)
16	XMODE	O	Reset output to IC for CD-TEXT (LC89170M)
17	XLT	O	Latch output to CXD2545
18	K. DATA-I	I	Keyboard data input
19	K. DATA-O	O	Keyboard data output
20	K. CLK-O	O	Keyboard clock output
21	—	O	Connected to Ground
22	DATA	O	Data output for D/F pin of CXD2545
23	DVDD	–	5V power supply
24	CLK	O	5V power supply clock output
25	TBLL	O	Table motor output for left tern
26	AMUTE	O	Audio mute output
27	TBLR	O	Table motor output for right tern
28	—	O	Open
29	PGM. LT	O	Latch output
30	LDON	O	Laser diode on
31	SENSE	I	Sense input from CXD2545
32	SUBQ	I	Sub code Q data input
33	SQCK	O	Sub code Q data read-out clock
34	AVCC	–	Analog power supply (Connected to +5V)
35	AVR +	–	Analog reference voltage input (Connected to +5V)
36	AVR –	–	Analog reference voltage input (Connected to ground)
37	AVss	–	Analog ground
38	KEY0	I	Key input
39	KEY1	I	Key input
40	KEY2	I	Key input

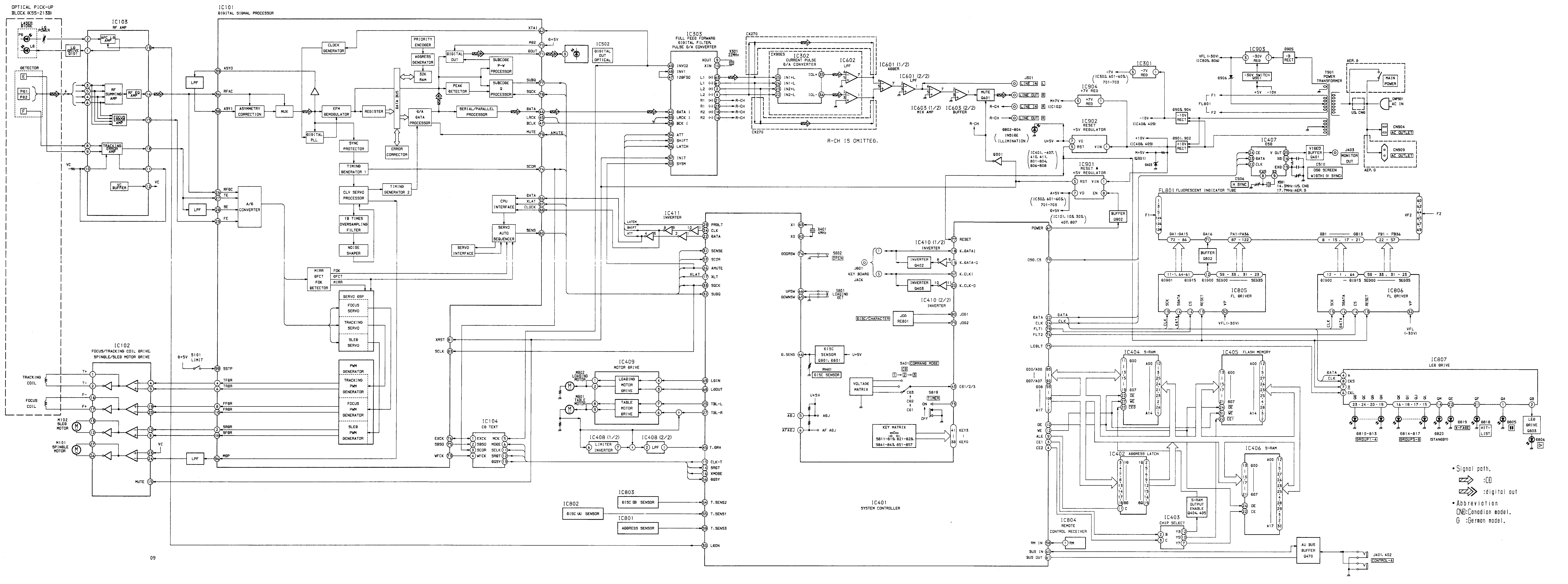
Pin No.	Pin Name	I/O	Function
41	KEY3	I	Key input
42	VSS	–	Ground pin
43	CD1/2/3	I	Command mode switch
44	FL. SLCT	I	Fluorescent indicator tube select port for different destination
45	T. DRV	I	Table driver
46	D. SENS	I	Disc sensor input
47	L. NTSC H. PAL	I	NTSC/PAL select
48	—	–	Open port
49	M2	–	Micro computer mode
50	M1	–	Micro computer mode
51	M0	–	Micro computer mode
52	HSTX	I	Hardware stand-by input
53	SCOR	I	SCOR input from CXD2545
54	T. SENS 2	I	Table sensor input
55	T. SENS 1	I	Table sensor input
56	DQSY	I	CD-TEXT sync input
57	K. CLKI	I	Keyboard clock input
58	RMIN	I	Remote control signal input
59	T. SENS 3	I	Table sensor
60	BUS IN	I	Control A1 input
61	BUS OUT	O	Control A1 output
62	—	O	Open port
63	—	O	Open port
64	—	O	Open port
65	DOWN SW	I	BU up switch input
66	UP SW	I	BU down switch input
67	POWER	O	Microprocessor peripheral IC power supply
68	LOD OUT	O	Loading motor output for outside direction
69	LOD IN	O	Loading motor output for inside direction
70	OSD. CS	O	Chip select output for OSD IC (MB90095)
71	—	O	Open port
72	—	O	Open port
73	TIMER	I	Timer switch input
74	DOOR-SW	I	Tray close switch input
75	LED LT	O	Chip select input for LED driver
76	FL-T 2	O	Chip select output for fluorescent indicator tube driver (IC1 M66004M5SP)
77	RESET	I	Reset input
78	FLT 1	O	Chip select output for fluorescent indicator tube driver (IC2 M66004M5SP)
79	JOG 2	I	Jog dial input
80	FOG 1	I	Jog dial input

Pin No.	Pin Name	I/O	Function
81	XGND	–	Ground
82	X0	I	X'tal oscillator terminal
83	X1	I	X'tal oscillator terminal
84	XVDD	–	+5V terminal
85	D00/A00	I/O	Data/Address common terminal for external RAM/ROM
86	D01/A01	I/O	Data/Address common terminal for external RAM/ROM
87	D02/A02	I/O	Data/Address common terminal for external RAM/ROM
88	D03/A03	I/O	Data/Address common terminal for external RAM/ROM
89	D04/A04	I/O	Data/Address common terminal for external RAM/ROM
90	D05/A05	I/O	Data/Address common terminal for external RAM/ROM
91	D06/A06	I/O	Data/Address common terminal for external RAM/ROM
92	D07/A07	I/O	Data/Address common terminal for external RAM/ROM
93	A08	O	Address terminal for external RAM/ROM
94	A09	O	Address terminal for external RAM/ROM
95	A10	O	Address terminal for external RAM/ROM
96	A11	O	Address terminal for external RAM/ROM
97	A12	O	Address terminal for external RAM/ROM
98	A13	O	Address terminal for external RAM/ROM
99	A14	O	Address terminal for external RAM/ROM
100	A15	O	Address terminal for external RAM/ROM

• **IC407 OSD (MB90095-OEM166)**

Pin No.	Pin Name	I/O	Function
1	—	–	Luminance signal input terminal for superimpose displays
2	—	–	Chroma signal input terminal for superimpose displays
3	—	–	Composite signal input terminal for superimpose displays
4	AVcc	–	Analog power supply pin
5	—	–	Not used
6	—	–	Not used
7	Vcc	–	Power supply pin
8	EXS	I	External circuit terminal of the clock generator for color burst signals
9	XS	O	External circuit terminal of the clock generator for color burst signals
10	$\overline{\text{HSYNC}}$	O	H. SYNC/COMPOSIT SYNC signal output
11	$\overline{\text{VSYNC}}$	O	V. SYNC signal output
12	—	–	Not used
13	—	–	Not used
14	Vss	–	Ground
15	EXD	I	External circuit terminal of the display dot clock generator
16	XD	O	External circuit terminal of the display dot clock generator
17	—	–	Not used
18	VOC2	O	Chroma signal output
19	VOC1	O	Chroma signal output
20	VOV0	O	Chroma signal output
21	$\overline{\text{TEST}}$	I	TEST signal input
22	CLK	I	Shift clock input terminal for serial transmission
23	DATA	I	Serial data input
24	CE	I	Chip select
25	—	–	Composite video signal output
26	—	–	Chroma signal output
27	—	–	Luminous signal output
28	AVss	–	Analog Ground pin

6-3. BLOCK DIAGRAM


OPTICAL PICK-UP BLOCK (KSS-213B)
LASER DIODE
LD POWER
PD
LD
DETECTOR
E
PD1
PD2
F
IC103
RF AMP
APC LD AMP
LD DRIVE Q101
RF SUMMING AMP
RF EQ AMP
FOCUS ERROR AMP
TRACKING ERROR AMP
VC BUFFER
VC
IC101
DIGITAL SIGNAL PROCESSOR
ASYO
RFAC
ASYI
LPF
ASYMMETRY CORRECTION
MUX
EFM DEMODULATOR
REGISTER
DIGITAL PLL
CLOCK GENERATOR
PRIORITY ENCODER
ADDRESS GENERATOR
32K RAM
DATA BUS
ERROR CORRECTOR
DIGITAL OUT
SUBCODE P-W PROCESSOR
SUBCODE Q PROCESSOR
PEAK DETECTOR
D/A DATA PROCESSOR
SERIAL/PARALLEL PROCESSOR
SYNC PROTECTOR
TIMING GENERATOR 1
TIMING GENERATOR 2
CLV SERVO PROCESSOR
1B TIMES OVERSAMPLING FILTER
NOISE SHAPER
RFDC
TE
SE
FE
A/D CONVERTER
CPU INTERFACE
SERVO AUTO SEQUENCER
SERVO INTERFACE
MIRR DFCT FOK DETECTOR
FOK
DFCT
MIRR
SERVO DSP
FOCUS SERVO
TRACKING SERVO
SLED SERVO
PWM GENERATOR
TRACKING PWM GENERATOR
FOCUS PWM GENERATOR
SLED PWM GENERATOR
XTAI
MD2
DOUT
SUBQ
SQCK
DATA
LRCK
BCLK
MUTE
SCOR
XLAT
CLOCK
SENS
XRST
SCLK
SSTP
TFDR
TRDR
FFDR
FRDR
SRDR
SFDR
MDP
D+5V
S101 LIMIT
IC102
FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED MOTOR DRIVE
TRACKING COIL
FOCUS COIL
T+
T-
F-
F+
M102 SLED MOTOR
M101 SPINDLE MOTOR
MUTE
IC104
CD TEXT
EXCK
SBSO
SCOR
WFCK
MCK
MODE
SCLK
SRDT
DQSY
IC502
DIGITAL OUT OPTICAL
IC303
FULL FEED FORWARD DIGITAL FILTER PULSE D/A CONVERTER
INVO2
INV1
128FSO
DATA I
LRCK I
BCK I
ATT
SHIFT
LATCH
INIT
SYSM
XOUT
XIN
X301 22MHz
AMUTE
CX270
CX90ES
IC302
CURRENT PULSE D/A CONVERTER
IN1+L
IN1-L
IN2+L
IN2-L
IOL+
IOL-
IC602
LPF
R-CH
R-CH IS OMITTED.
IC601 (1/2)
ADDER
IC601 (2/2)
LPF
IC603 (1/2)
MIX AMP
IC603 (2/2)
BUFFER
MUTE Q601
J301
LINE IN L
LINE OUT R
LINE IN R (IC102)
LINE OUT R
D802-804 INSIDE ILLUMINATION
Q301
IC411
INVERTER
PRGLT
CLK
DATA
SENSE
SCOR
AMUTE
XLT
SQCK
SUBQ
IC409
MOTOR DRIVE
M802 LOADING MOTOR
LOADING MOTOR DRIVE
M801 TABLE MOTOR
TABLE MOTOR DRIVE
IC408 (1/2)
LIMITER INVERTER
IC408 (2/2)
LPF
LDIN
LDOUT
TBL-L
TBL-R
T.DRV
CLK-T
SRDT
XMODE
DQSY
IC803
DISC (B) SENSOR
IC802
DISC (A) SENSOR
IC801
ADDRESS SENSOR
T.SENS2
T.SENS1
T.SENS3
LDON
X1
X0
X401 4MHz
DOORSW
S802 OPEN
UPSW
DOWNSW
S801 LOADING DET
D.SENS
DISC SENSOR Q801, D801
U+5V
RV401 DISC SENSOR
ADJ
AFADJ
AF ADJ
J801 KEY BOARD JACK
IC410 (1/2)
INVERTER
INVERTER Q402
INVERTER Q403
RESET
K.DATAI
K.DATA-O
K.CLKI
K.CLK-O
IC410 (2/2)
INVERTER
DISC/CHARACTER
JOG RE801
JOG1
JOG2
S401 COMMAND MODE
CD
VOLTAGE MATRIX
CD1/2/3
S819 TIMER
ON
OFF
KEY MATRIX
S811-819, 821-828, S841-843, 851-857
KEY3
KEY0
IC401
SYSTEM CONTROLLER
IC301
-7V REG
-7V
(IC302, 601-603, 701-703)
IC904
+7V REG
M+7V
IC902
RESET +5V REGULATOR
VO
RST
VIN
(IC401, -407, 410, 411, 801-804, 806-808)
IC901
RESET & +5V REGULATOR
EN
A+5V
D+5V
(IC101, 103, 303, 407, 807)
BUFFER Q902
POWER
OSD.CS
DATA
CLK
FLT1
FLT2
LEDLT
D00/A00
D07/A07
D08
A17
OE
WE
ALE
CE1
CE2
RM IN
BUS IN
BUS OUT
IC903
-30V REG
VFL (-30V) (IC805, 806)
D905
-B RECT
-30V SWITCH Q901
+5V
-10V
D906
T901 POWER TRANSFORMER
FL801
F1
F2
D903, 904
-10V RECT
-10V (IC408, 409)
D901, 902
+10V RECT
+10V (IC408, 409)
M+5V (Q301)
D403
AEP, G
MAIN POWER
US, CND
CNP901 AC IN
CN904 AC OUTLET
CN909 AC OUTLET
IC407
OSD
CE
DATA
CLK
V OUT
XD
EXD
EXS
XS
VIDEO BUFFER Q401
J403 MONITOR OUT
C510 OSD SCREEN WIDTH (V SYNC)
C506 H SYNC
X501 14.3MHz:US, CND 17.7MHz:AEP, G
FL801 FLUORESCENT INDICATOR TUBE
VF2
GA1-GA15
GA16
PA1-PA36
GB1 GB13
PB1 - PB36
BUFFER Q802
IC805
FL DRIVER
IC806
FL DRIVER
DIG00
DIG01
DIG15
SEG00
SEG35
SCK
SDATA
CS
RESET
VP
VFL (-30V)
IC404 S-RAM
IC405 FLASH MEMORY
IC406 S-RAM
IC402 ADDRESS LATCH
IC403
CHIP SELECT
S-RAM OUTPUT ENABLE Q404, 405
IC804
REMOTE CONTROL RECEIVER
RM
AU BUS BUFFER Q470
J401, 402 CONTROL-A
IC807
LED DRIVE
A
CKS
R
CKL
D810-813 GROUP1-4
D814-817 GROUP5-8
D820 (STANDBY)
D819 X-FADE
D818 HIT-LIST
D805
LED DRIVE Q803
D806
09
• Signal path.
:CD
:digital out
• Abbreviation
CND:Canadian model.
G :German model.

6-4. PRINTED WIRING BOARD — BD, DISP SECTION —

• See page 31 for Circuit Boards Location.

• **Semiconductor Location**

Ref. No.	Location
D805	C-14
D806	C-13
D810	C-20
D811	C-21
D812	C-21
D813	C-22
D814	B-20
D815	B-20
D816	B-21
D817	B-22
D818	C-23
D819	B-23
D820	D-18
D821	F-11
D822	F-11
D823	F-10
IC101	C-9
IC102	B-3
IC103	A-9
IC104	C-5
IC804	H-13
IC805	F-22
IC806	F-19
IC807	D-18
Q101	B-4
Q802	D-22
Q803	C-14

Note:

- ⟵ : parts extracted from the component side.
- ○ : Through hole.
- ▒ : Pattern from the side which enable seeing. (The other layer's patterns are not indicated.)
- ▨ : Solder bridge.

【BD(TEXT) BOARD】(SIDE A)

【BD(TEXT) BOARD】(SIDE B)

【JOG BOARD】

【DISPLAY BOARD】

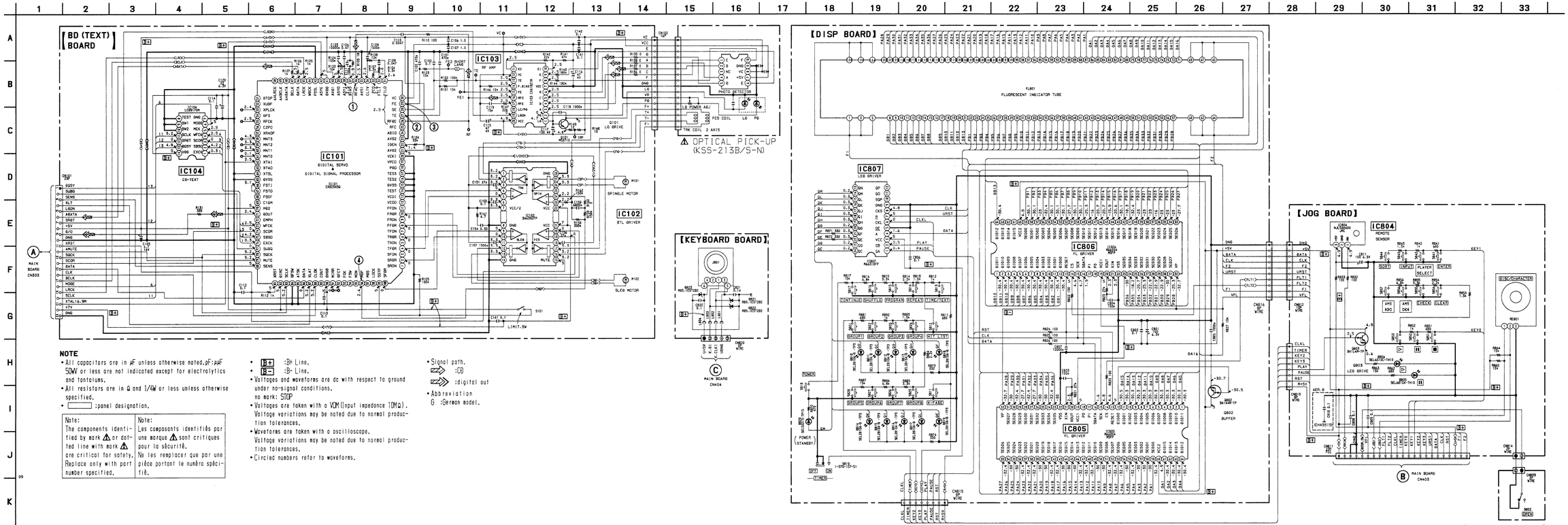
【KEYBOARD BOARD】

【DOOR SW BOARD】

(OPTICAL PICK-UP BLOCK KSS-213B/S-N)

6-5. SCHEMATIC DIAGRAM — BD, DISP SECTION —

- See page 32 for IC Pin Functions. (IC101)
- See page 60 for IC Block Diagrams.



NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- [ ] : panel designation.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- B+ : B+ Line.
- B− : B− Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions. no mark: STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨ : CD ⇨ : digital out
- Abbreviation G : German model.

- Waveforms

① IC101 ⊗ PLAY — 1.4Vp-p

② IC101 ⊗ PLAY — 2.5V, APPROX 400mVp-p

③ IC101 ⊗ PLAY — 2.5V, APPROX 200mVp-p

④ IC101 ⊗ PLAY — 5.2Vp-p, 7.5μsec

- **Semiconductor Location**

Ref. No.	Location
D301	H-29
D302	C-31
D401	F-22
D402	E-10
D403	F-9
D404	D-21
D405	D-21
D406	D-24
D407	D-24
D408	D-21
D410	C-27
D411	D-14
D412	C-25
D413	C-28
D414	F-27
D415	C-25
D416	E-27
D470	B-14
D801	G-11
D802	E-15
D803	E-16
D804	E-17
D901	E-7
D902	E-7
D903	F-7
D904	E-7
D905	D-7
D906	D-7
D911	G-27
IC301	F-27
IC302	F-29
IC303	C-29
IC401	E-25
IC402	D-22
IC403	D-23
IC404	E-23
IC405	F-23
IC406	F-24
IC407	H-25
IC408	D-21
IC409	F-21
IC410	C-24
IC411	D-26
IC502	A-16
IC601	H-27
IC602	G-28
IC603	H-28
IC701	H-31
IC702	G-30
IC703	H-30
IC801	H-14
IC802	H-15
IC803	I-15
IC901	D-10
IC902	D-12
IC903	D-7
IC904	D-13
Q301	I-29
Q401	H-26
Q402	C-23
Q403	C-23
Q404	E-22
Q405	F-22
Q470	B-13
Q601	I-28
Q701	I-30
Q801	H-11
Q901	E-7
Q902	D-10

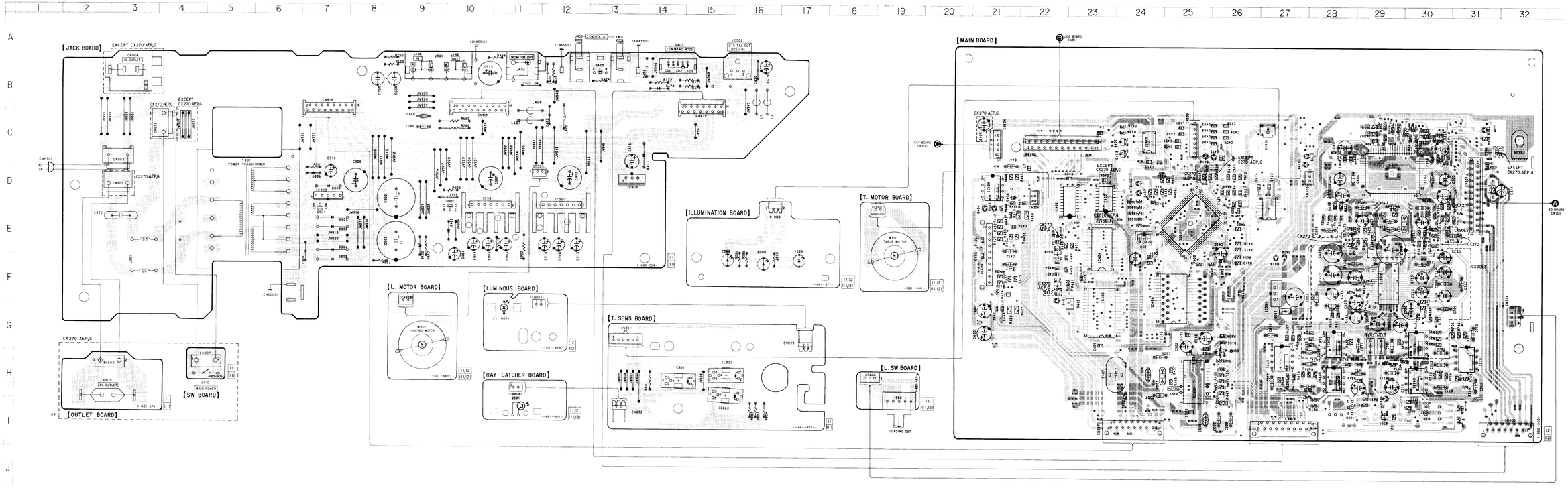
Note:

- ⟷ : parts extracted from the component side.
- △ : internal component.
- : Pattern from the side which enable seeing.

- Abbreviation
  JW : Jumper wire.

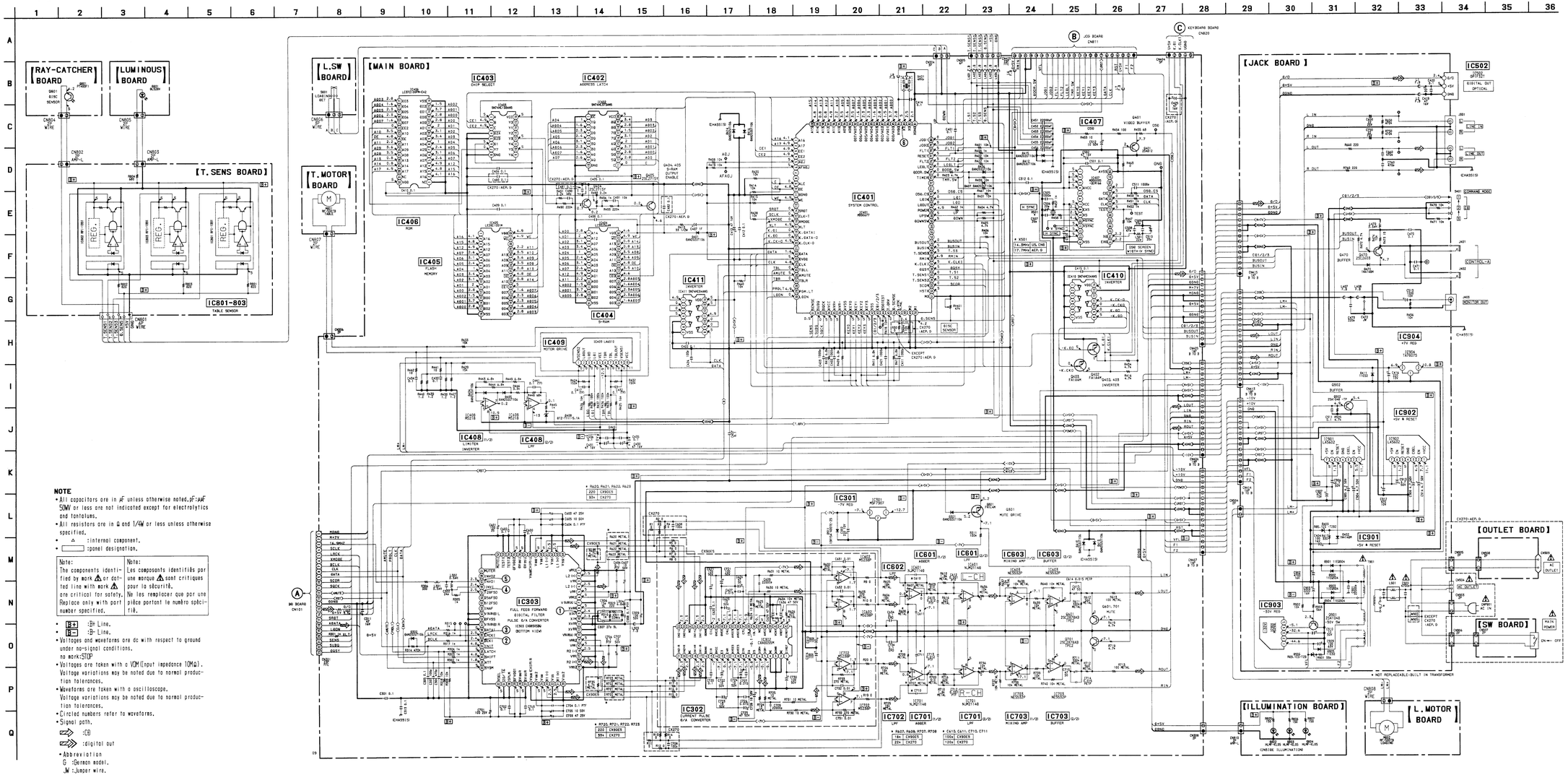
6-6. PRINTED WIRING BOARD — MAIN SECTION —

• See page 31 for Circuit Boards Location.

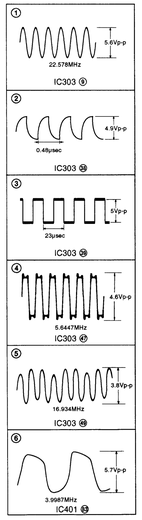


6-7. SCHEMATIC DIAGRAM — MAIN SECTION—

- **See page 35 for IC Pin Functions. (IC401, 407)**
- **See page 62 for IC Block Diagrams.**



• Waveforms



NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Δ : internal component.
- ▭ : panel designation.

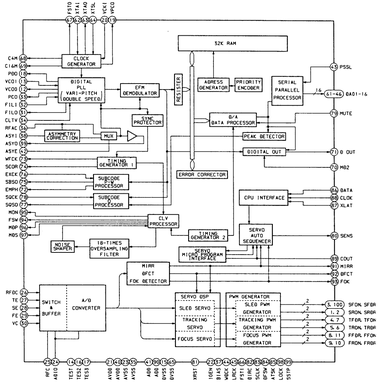
Note:	Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- 🅱+ : B+ Line.
- 🅱- : B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions. no mark:STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD
  ⇨ : digital out
- Abbreviation
  G : German model.
  J : Jumper wire.

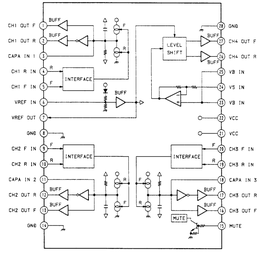
6-8. IC BLOCK DIAGRAMS

• BD, DISP Section

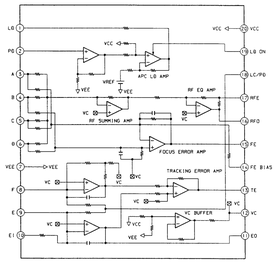
IC101 CXD2545Q



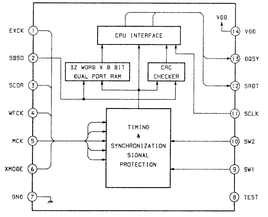
IC102 BA6392FP



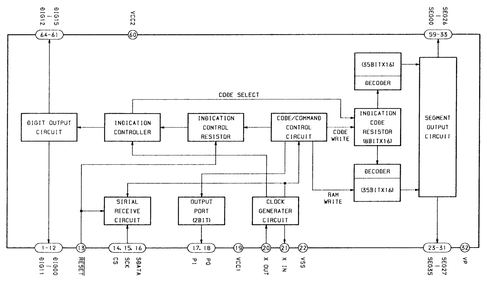
IC103 CXA1821M



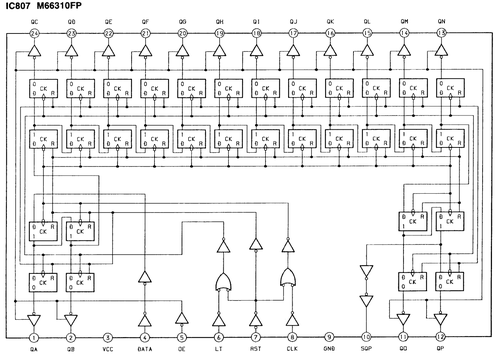
IC104 LC89170M



IC805, 806 M66004M5FP

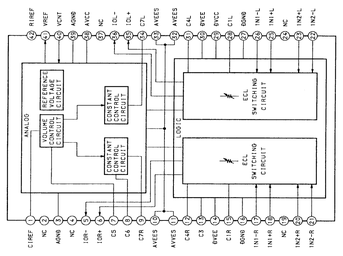


IC807 M66310FP

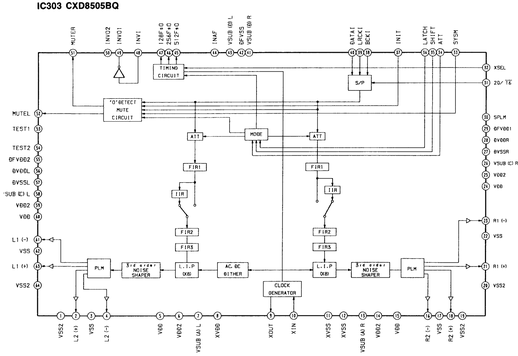


• MAIN Section

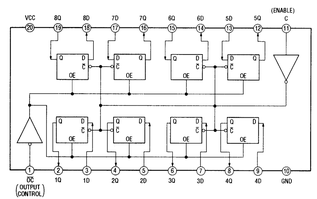
IC302 CXA8055M



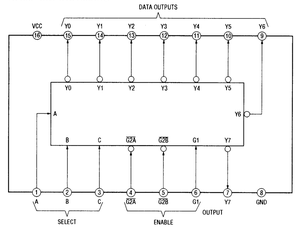
IC303 CXD8505BQ



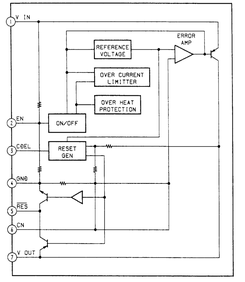
IC402 SN74HC373ANS



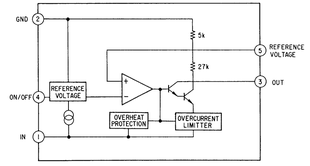
IC403 SN74HC138ANS



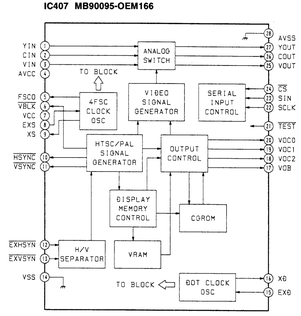
IC901, 902 LA5602



IC903 M5293L



IC407 MB90095-OEM166



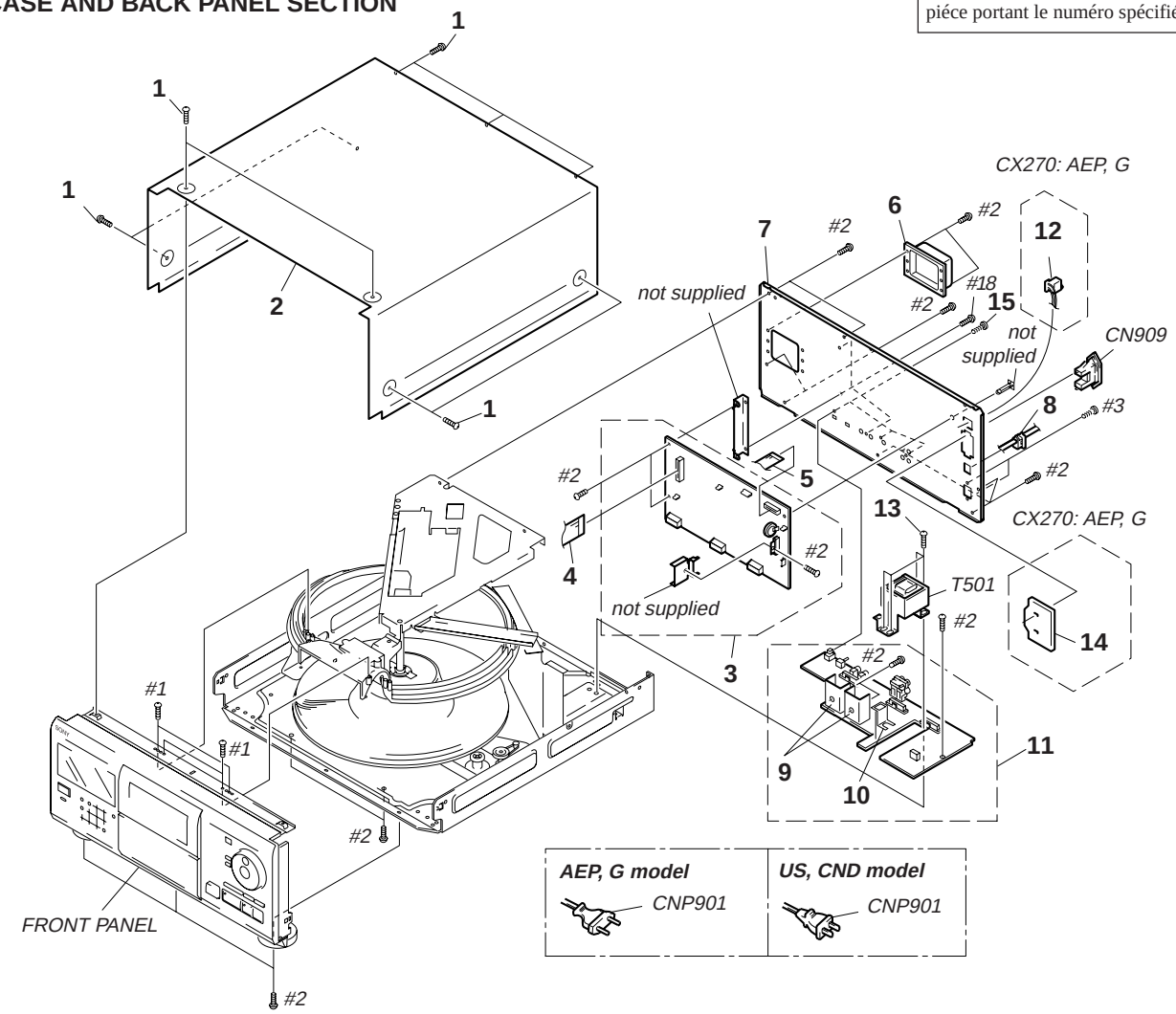
SECTION 7
EXPLODED VIEWS

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- Abbreviation
  CND : Canadian model
  G : German model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

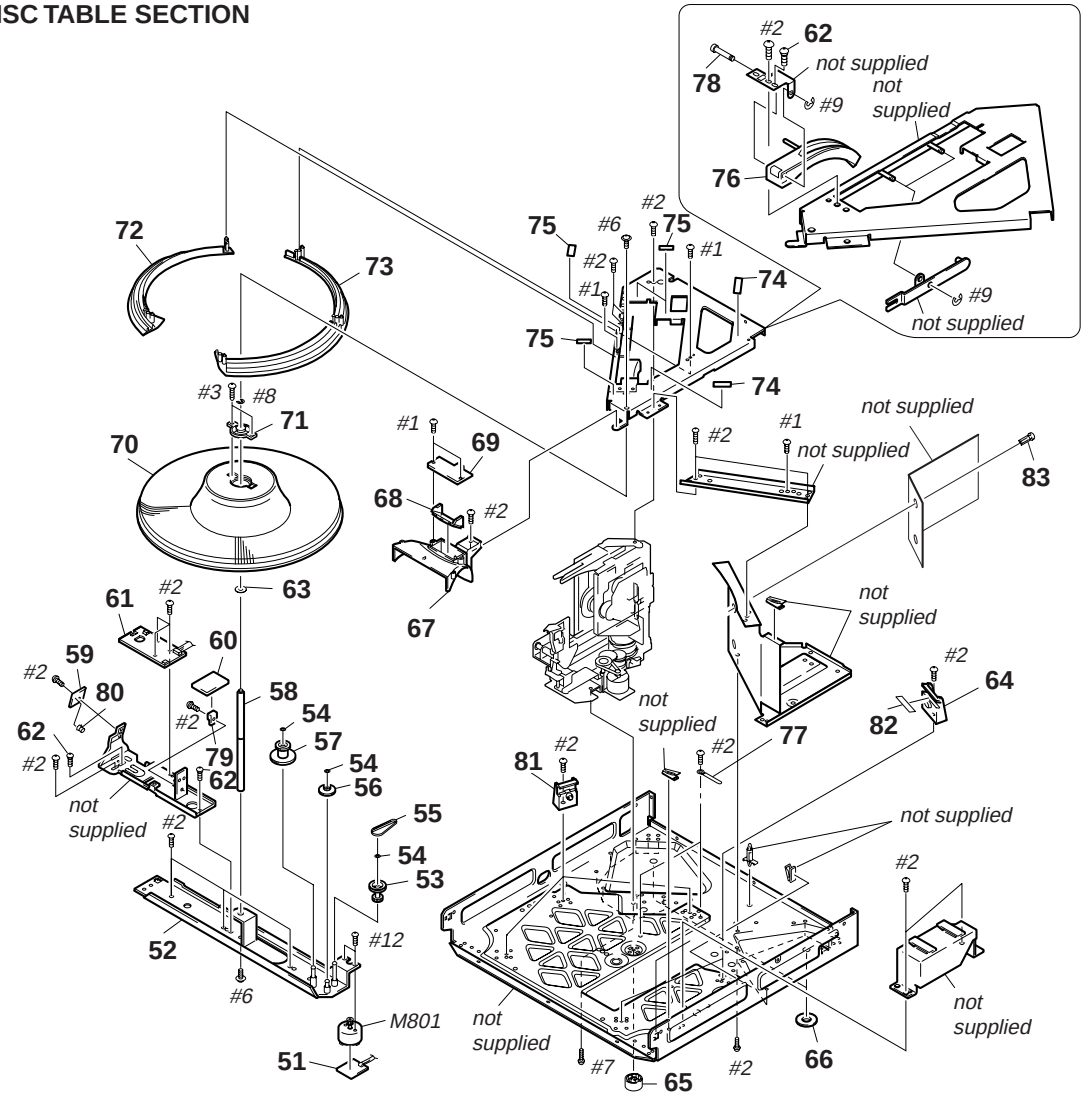
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

7-1. CASE AND BACK PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	3-363-099-01	SCREW (CASE 3 TP2)	
* 2	4-982-946-11	CASE	
* 3	A-4699-080-A	MAIN BOARD, COMPLETE (CX270:US,CND)	
* 3	A-4699-090-A	MAIN BOARD, COMPLETE (CX90ES)	
* 3	A-4699-232-A	MAIN BOARD, COMPLETE (CX270:AEP,G)	
4	1-773-183-11	WIRE (FLAT TYPE)(23 CORE)	
5	1-777-398-11	WIRE (FLAT TYPE)(23 CORE)	
* 6	4-982-807-01	COVER (FFC)	
* 7	4-983-366-01	PANEL, BACK (CX270:US)	
* 7	4-983-366-11	PANEL, BACK (CX270:CND)	
* 7	4-983-366-21	PANEL, BACK (CX270:AEP,G)	
* 7	4-983-366-31	PANEL, BACK (CX90ES:US)	
* 7	4-983-366-41	PANEL, BACK (CX90ES:CND)	
* 8	3-703-244-00	BUSHING (2104), CORD	
* 9	4-363-146-31	HEAT SINK, V.OUT	
* 10	4-962-200-01	PLATE (TR), GROUND	
* 11	A-4699-081-A	JACK BOARD, COMPLETE (CX270:US,CND)	
* 11	A-4699-082-A	JACK BOARD, COMPLETE (CX270:AEP,G)	
* 11	A-4699-091-A	JACK BOARD, COMPLETE (CX90ES)	
* 12	1-662-505-11	SW BOARD (CX270:AEP,G)	
13	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
* 14	1-662-574-11	OUTLET BOARD (CX270:AEP,G)	
15	3-704-515-01	SCREW (BV/RING)	
⚠ CN909	1-526-794-11	OUTLET, AC (CX270:AEP,G)	
⚠ CNP901	1-575-042-21	CORD, POWER (CX90ES/CX270:US,CND)	
⚠ CNP901	1-575-651-21	CORD, POWER (CX270:AEP,G)	
⚠ T501	1-429-680-11	TRANSFORMER, POWER (CX90ES/CX270:US,CND)	
⚠ T501	1-429-681-11	TRANSFORMER, POWER (CX270:AEP,G)	

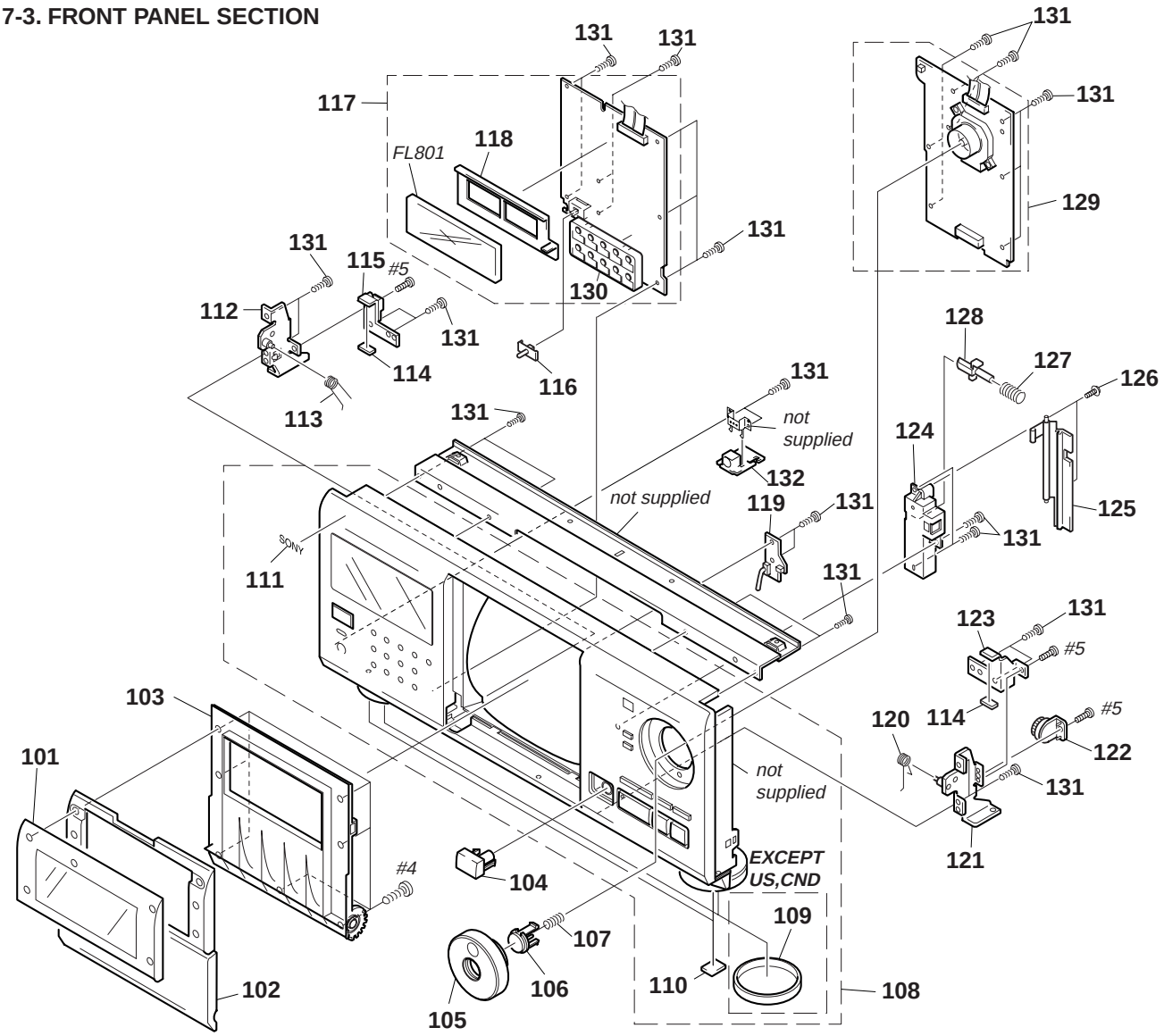
7-2. DISC TABLE SECTION



Ref. No.	Part No.	Description	Remark
* 51	1-661-466-11	T.MOTOR BOARD	
52	X-4947-230-1	BRACKET (TABLE) ASSY	
53	X-4947-607-1	GEAR (PULLEY) ASSY	
54	3-325-697-21	WASHER	
55	4-982-867-01	BELT (TIMING)	
56	4-982-893-01	GEAR (CENTER 2)	
57	4-982-891-01	GEAR (TABLE)	
58	4-982-892-01	SHAFT (CENTER)	
* 59	1-661-468-11	LUMINOUS BOARD	
* 60	1-661-469-11	RAY CATCHER BOARD	
* 61	1-661-470-11	T.SENS BOARD	
62	3-356-601-11	SCREW, STEP	
63	3-701-446-21	WASHER, 8	
64	X-4947-229-1	HOLDER (ROLLER) ASSY	
65	4-931-169-01	FOOT	
66	4-983-279-01	CUSHION (RF)	
* 67	4-982-804-01	COVER (DISC)	

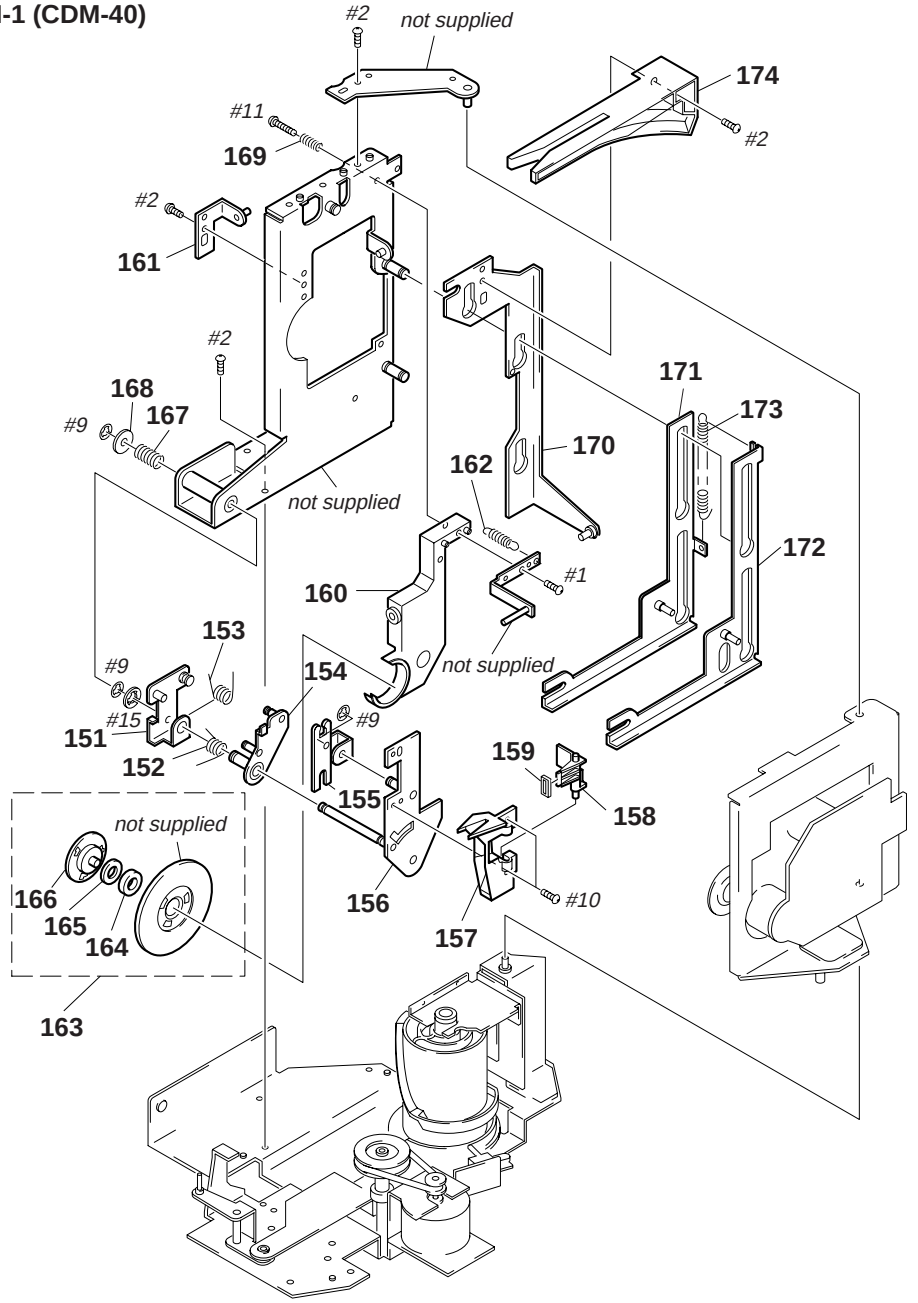
Ref. No.	Part No.	Description	Remark
68	4-982-805-01	INDICATOR (INTERNAL)	
* 69	1-661-471-11	ILLUMINATION BOARD	
70	X-4947-231-1	TABLE (200) ASSY	
71	4-976-471-01	BEARING (TABLE)	
* 72	4-982-803-01	RING (B)	
* 73	4-982-802-01	RING (A)	
* 74	3-378-433-01	CUSHION, SARANET	
75	4-985-553-01	CUSHION	
76	4-982-862-01	GUIDE (DISC T)	
77	3-703-397-01	STOPPER, WIRING	
78	4-982-870-01	SHAFT (GUIDE FULCRUM)	
* 79	4-985-300-01	HOLDER (P-T)	
* 80	4-976-473-01	HOLDER (LED-S)	
81	X-4947-606-1	HOLDER (ROLLER 2) ASSY	
82	4-985-574-01	SPACER (ROLLER)	
83	4-053-543-01	RIVET, NYLON	
M801	A-4604-847-A	MOTOR ASSY (TABLE)	

7-3. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
101	4-982-780-01	WINDOW (LID)(CX270)	
101	4-983-371-01	WINDOW (LID)(CX90ES)	
102	4-982-778-11	LID (F)(CX270)	
102	4-983-369-01	LID (F)(CX90ES)	
103	4-982-779-01	LID (R)(CX270)	
103	4-983-370-01	LID (R)(CX90ES)	
104	4-982-781-01	BUTTON (OPEN)	
105	4-982-787-11	KNOB (JOG)	
106	4-982-788-01	BUTTON (ENTER)	
107	4-984-085-01	SPRING (ENTER), COMPRESSION	
108	X-4947-313-1	PANEL ASSY, FRONT (CX270:US,CND)	
108	X-4947-314-1	PANEL ASSY, FRONT (CX270:AEP,G)	
108	X-4947-315-1	PANEL ASSY, FRONT (CX90ES)	
109	4-977-593-11	RING (DIA.50), ORNAMENTAL(EXCEPT US,CND)	
110	4-977-358-11	CUSHION (8X12.5)	
111	4-963-404-21	EMBLEM (5-A), SONY	
112	X-4947-219-1	PLATE (A) ASSY, FULCRUM	
113	4-982-797-11	SPRING (A), TORSION	
114	4-982-799-01	CUSHION (STOPPER)	
* 115	4-982-793-01	STOPPER (A)	
116	3-917-216-21	KNOB (TIMER)	
* 117	A-4699-087-A	DISP BOARD, COMPLETE	
* 118	4-983-363-01	HOLDER (FL)	
* 119	1-661-464-11	DOOR SW BOARD	
120	4-982-798-11	SPRING (B), TORSION	
121	X-4947-220-1	PLATE (B) ASSY, FULCRUM	
122	3-354-963-01	DAMPER	
* 123	4-982-794-01	STOPPER (B)	
* 124	4-982-782-01	HOLDER (OPEN)	
* 125	4-982-783-01	LEVER (WINDMILL)	
126	4-933-134-01	SCREW (+PTPWH M2.6X6)	
127	4-982-785-01	SPRING (OPEN), COMPRESSION	
128	4-982-784-01	LEVER (LOCK)	
* 129	A-4699-088-A	JOG BOARD, COMPLETE (EXCEPT AEP,G)	
* 129	A-4699-530-A	JOG BOARD, COMPLETE (AEP,G)	
* 130	4-982-812-01	HOLDER (LED)	
131	4-951-620-01	SCREW (2.6X8), +BVTP	
* 132	1-662-500-11	KEYBOARD BOARD	
FL801	1-517-565-11	INDICATOR TUBE, FLUORESCENT	

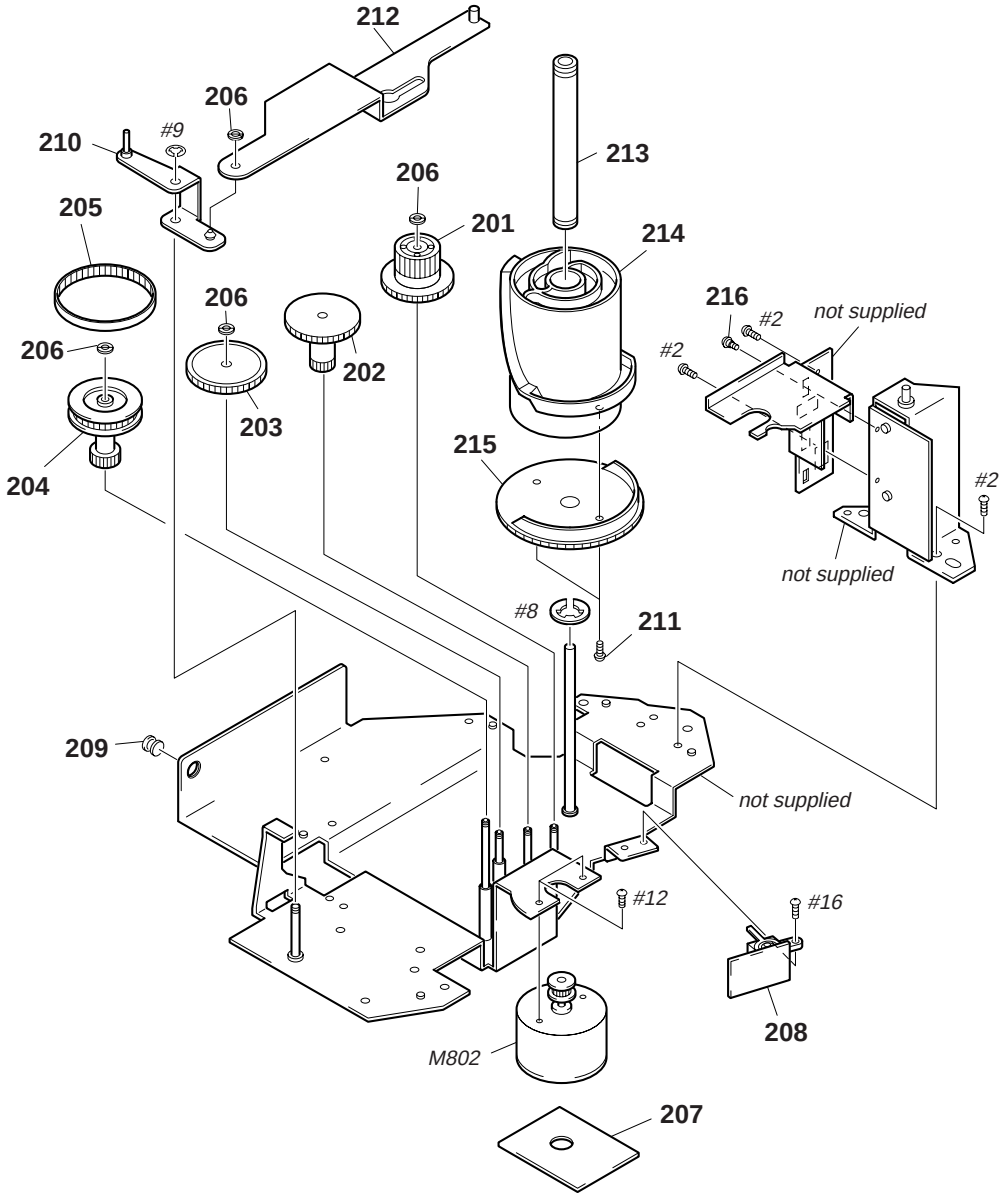
7-4. MECHANISM SECTION-1 (CDM-40)



Ref. No.	Part No.	Description	Remark
151	X-4947-241-1	LEVER (C) ASSY	
152	4-982-882-01	SPRING (LIMITTER), TORSION	
153	4-982-881-01	SPRING (HOLDER), TORSION	
154	X-4947-239-1	LIMITTER (A) ASSY	
155	4-982-853-01	LEVER (B)	
156	X-4947-240-1	LEVER (A) ASSY	
157	4-982-854-01	HOLDER (DISC A)	
158	4-982-855-01	HOLDER (DISC B)	
159	4-982-856-01	PAD	
160	4-976-458-01	HOLDER (MAGNET)	
161	X-4946-326-1	HOLDER (CLAMP) ASSY	
162	4-983-777-01	SPRING (MG), TENSION	

Ref. No.	Part No.	Description	Remark
163	A-4672-092-A	MAGNET ASSY	
164	3-366-559-02	MAGNET (CHUCK)	
165	4-960-633-01	YOKE (MAGNET)	
166	4-960-632-11	PULLEY (B)	
167	4-983-319-01	SPRING (THRUST), COMPRESSION	
* 168	4-976-456-01	WASHER (STOPPER)	
169	3-938-588-01	SPRING, COMPRESSION	
170	X-4947-242-1	SLIDER (C) ASSY	
171	X-4947-238-1	SLIDER (B) ASSY	
172	X-4947-237-1	SLIDER (A) ASSY	
173	4-982-880-01	SPRING (SLIDER A),TENSION	
* 174	4-982-863-01	GUIDE (DISC P)	

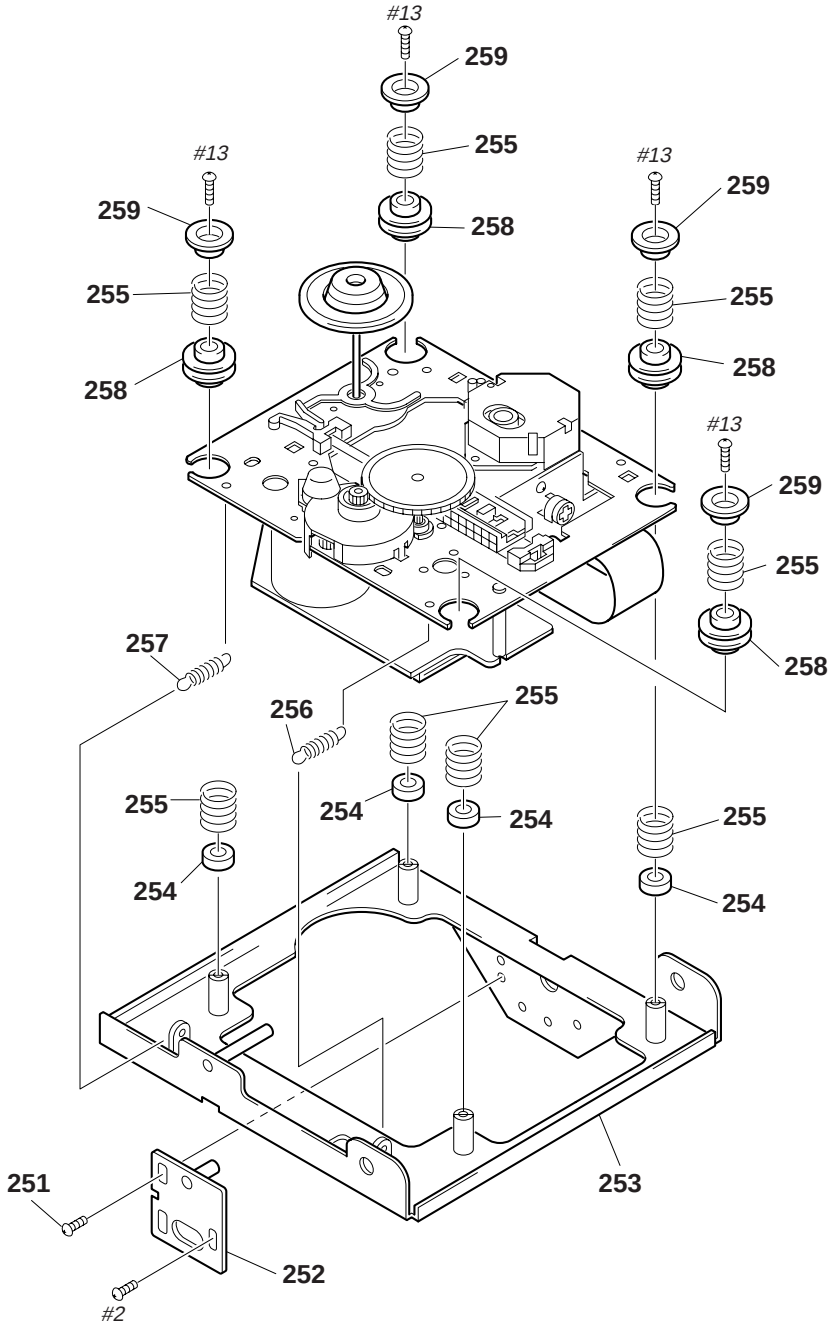
7-5. MECHANISM SECTION-2 (CDM-40)



Ref. No.	Part No.	Description	Remark
201	4-976-465-01	GEAR (LOADING 1)	
202	4-976-466-01	GEAR (LOADING 2)	
203	4-982-893-01	GEAR (CENTER 2)	
204	X-4947-607-1	GEAR (PULLEY) ASSY	
205	4-982-867-01	BELT (TIMING)	
206	3-325-697-21	WASHER	
* 207	1-661-465-11	L.MOTOR BOARD	
* 208	1-661-467-11	L.SW BOARD	
209	3-489-073-00	SCREW, THRUST	

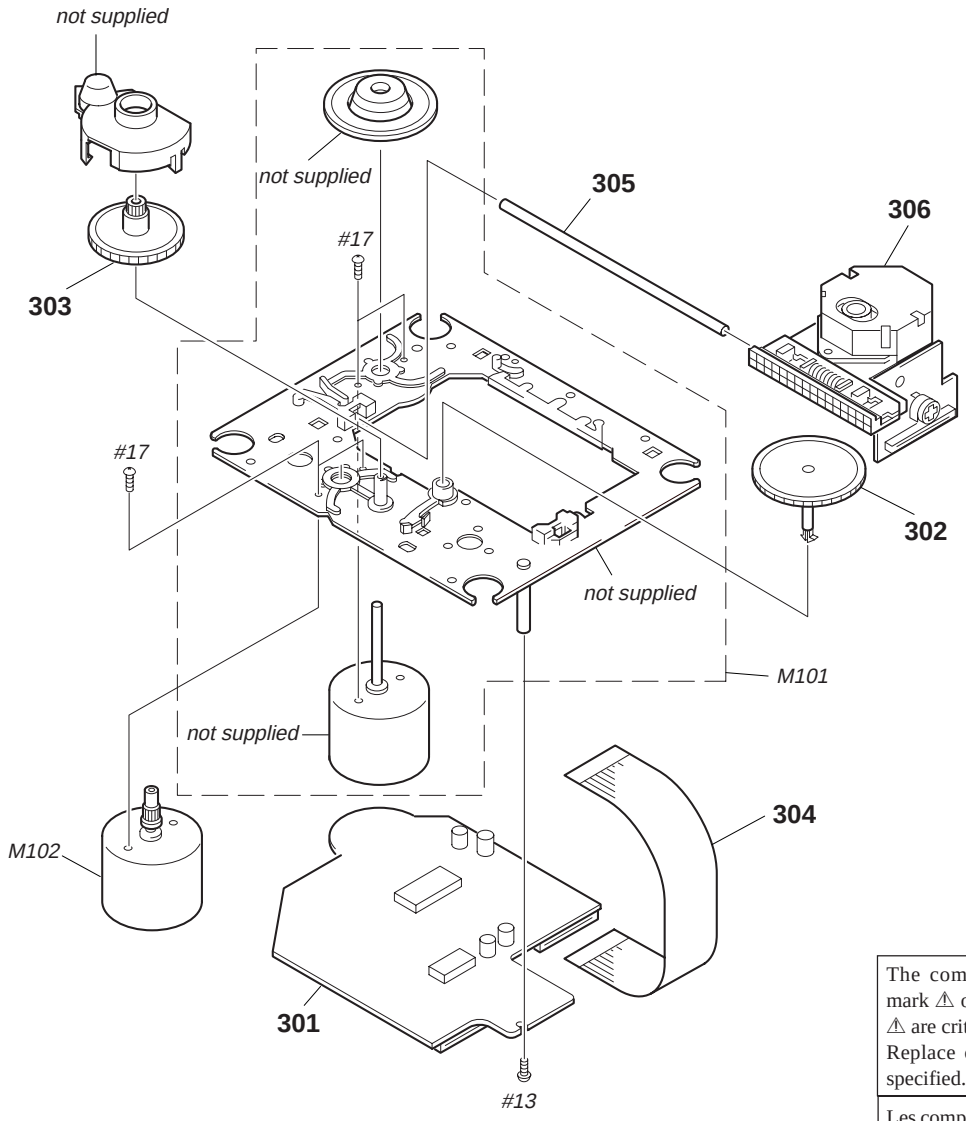
Ref. No.	Part No.	Description	Remark
210	X-4947-227-1	LEVER (STOPPER) ASSY	
211	4-951-291-01	SCREW	
212	X-4947-234-1	SLIDER (LOCK) ASSY	
213	4-982-857-01	BEARING (CAM)	
214	4-982-860-01	CAM (A)	
215	4-982-861-01	CAM (B)	
216	3-356-601-11	SCREW, STEP	
M802	A-4604-847-A	MOTOR ASSY (LOADING)	

7-6. BASE UNIT SECTION-1 (KSM-213 BKN/M-N)



Ref. No.	Part No.	Description	Remark
251	3-356-601-11	SCREW, STEP	
252	X-4947-244-1	SLIDER (BU ADJUSTMENT) ASSY	
253	X-4947-243-1	HOLDER (BU) ASSY	
254	4-982-859-01	HOLDER (DAMPER)	
255	4-982-878-01	SPRING (F), COMPRESSION	
256	4-982-872-01	SPRING (F-2), TENSION	
257	4-982-871-01	SPRING (F-1), TENSION	
258	4-982-858-01	DAMPER	
259	4-960-617-01	CAP (F)	

7-7. BASE UNIT SECTION-2 (KSM-213 BKN/M-N)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
* 301	A-4699-163-A	BD (TEXT) BOARD, COMPLETE	
302	2-626-907-01	GEAR (A)(S)	
303	2-627-003-01	GEAR (B)(RP)	
304	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
305	2-626-908-01	SHAFT, SLED	

Ref. No.	Part No.	Description	Remark
⚠306	8-848-376-01	OPTICAL PICK-UP BLOCK KSS-213B/S-N	
M101	X-2626-234-1	T.T CHAISSIS ASSY (MG)(K)(SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB)(RP)(SLED)	

BD (TEXT)

SECTION 8
ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: µ , for example:
  uA...: µ A..., uPA...: µ PA..., uPB...: µ PB..., uPC...: µ PC..., uPD...: µ PD...
- CAPACITORS
  uF : µ F
- COILS
  uH : µ H
- Abbreviation
  CND : Canadian model
  G : German model

Ref. No.	Part No.	Description			Remark
*	A-4699-163-A	BD (TEXT) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C105	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C106	1-164-346-11	CERAMIC CHIP	1uF		16V
C107	1-164-346-11	CERAMIC CHIP	1uF		16V
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C109	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C112	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C114	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-126-607-11	ELECT CHIP	47uF	20%	4V
C117	1-126-209-11	ELECT	100uF	20%	4V
C118	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C119	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C120	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C140	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C141	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C153	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C154	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C156	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C157	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN101	1-770-072-11	CONNECTOR, FFC 23P			
CN102	1-770-014-11	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC101	8-752-369-78	IC CXD2545Q			
IC102	8-759-176-09	IC BA6392FP			
IC103	8-752-072-45	IC CXA1821M-T6			
IC104	8-759-428-57	IC LC89170M			
		< MOTOR >			
M101	X-2626-234-1	T.T CHAISSIS ASSY (MG)(K)(SPINDLE)			
M102	X-2625-769-1	MOTOR GEAR ASSY (MB)(RP)(SLED)			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
		< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K	5%	1/10W
R102	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-121-91	METAL GLAZE	1M	5%	1/10W
R110	1-216-025-91	METAL GLAZE	100	5%	1/10W
R112	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R125	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R126	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R127	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R131	1-216-037-00	METAL CHIP	330	5%	1/10W
R135	1-216-295-91	CONDUCTOR, CHIP(2012)			
R136	1-216-295-91	CONDUCTOR, CHIP(2012)			
R137	1-216-295-91	CONDUCTOR, CHIP(2012)			
R138	1-216-295-91	CONDUCTOR, CHIP(2012)			
R141	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R142	1-216-081-00	METAL CHIP	22K	5%	1/10W
R143	1-216-103-00	METAL CHIP	180K	5%	1/10W
R144	1-216-103-00	METAL CHIP	180K	5%	1/10W
R146	1-216-073-00	METAL CHIP	10K	5%	1/10W
R147	1-216-081-00	METAL CHIP	22K	5%	1/10W
R148	1-216-001-00	METAL CHIP	10	5%	1/10W
R149	1-216-003-11	METAL GLAZE	12	5%	1/10W
R158	1-216-111-91	METAL GLAZE	390K	5%	1/10W
R159	1-216-101-00	METAL CHIP	150K	5%	1/10W
R160	1-216-295-91	CONDUCTOR, CHIP(2012)			

Ref. No.	Part No.	Description			Remark
R161	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R162	1-216-101-00	METAL CHIP	150K	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
**********					
*	A-4699-087-A	DISP BOARD, COMPLETE			
		**********			
*	4-982-812-01	HOLDER (LED)			
*	4-983-363-01	HOLDER (FL)			
		< CAPACITOR >			
C801	1-124-584-00	ELECT	100uF	20%	10V
C802	1-164-159-11	CERAMIC	0.1uF		50V
C803	1-162-282-31	CERAMIC	100PF	10%	50V
C804	1-162-282-31	CERAMIC	100PF	10%	50V
C805	1-162-294-31	CERAMIC	0.001uF	10%	50V
C806	1-164-159-11	CERAMIC	0.1uF		50V
C807	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< DIODE >			
D810	8-719-301-52	DIODE SEL2810A-C (GROUP 1)			
D811	8-719-301-52	DIODE SEL2810A-C (GROUP 2)			
D812	8-719-301-52	DIODE SEL2810A-C (GROUP 3)			
D813	8-719-301-52	DIODE SEL2810A-C (GROUP 4)			
D814	8-719-301-52	DIODE SEL2810A-C (GROUP 5)			
D815	8-719-301-52	DIODE SEL2810A-C (GROUP 6)			
D816	8-719-301-52	DIODE SEL2810A-C (GROUP 7)			
D817	8-719-301-52	DIODE SEL2810A-C (GROUP 8)			
D818	8-719-301-52	DIODE SEL2810A-C (TIME/TEXT)			
D819	8-719-301-52	DIODE SEL2810A-C (X-FADE)			
D820	8-719-046-44	DIODE SEL5221S (POWER)			
		< FLUORESCENT INDICATOR >			
FL801	1-517-565-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC805	8-749-012-65	IC M66004M5FP			
IC806	8-749-012-65	IC M66004M5FP			
IC807	8-759-183-47	IC M66310FP			
		< TRANSISTOR >			
Q802	8-729-900-80	TRANSISTOR DTC114ES			
		< RESISTOR >			
R811	1-249-415-11	CARBON	680	5%	1/4W F
R812	1-249-417-11	CARBON	1K	5%	1/4W F
R813	1-249-419-11	CARBON	1.5K	5%	1/4W F
R814	1-249-421-11	CARBON	2.2K	5%	1/4W F

Ref. No.	Part No.	Description			Remark
R815	1-247-843-11	CARBON	3.3K	5%	1/4W
R816	1-249-427-11	CARBON	6.8K	5%	1/4W F
R817	1-249-431-11	CARBON	15K	5%	1/4W
R820	1-247-807-31	CARBON	100	5%	1/4W
R821	1-249-434-11	CARBON	27K	5%	1/4W
R822	1-247-807-31	CARBON	100	5%	1/4W
R823	1-249-434-11	CARBON	27K	5%	1/4W
R824	1-247-807-31	CARBON	100	5%	1/4W
R825	1-247-807-31	CARBON	100	5%	1/4W
R826	1-247-807-31	CARBON	100	5%	1/4W
R827	1-249-429-11	CARBON	10K	5%	1/4W
R870	1-249-413-11	CARBON	470	5%	1/4W F
R871	1-249-411-11	CARBON	330	5%	1/4W
R872	1-249-411-11	CARBON	330	5%	1/4W
R873	1-249-411-11	CARBON	330	5%	1/4W
R874	1-249-411-11	CARBON	330	5%	1/4W
R881	1-249-415-11	CARBON	680	5%	1/4W F
R882	1-249-417-11	CARBON	1K	5%	1/4W F
R883	1-249-419-11	CARBON	1.5K	5%	1/4W F
R884	1-249-421-11	CARBON	2.2K	5%	1/4W F
R885	1-247-843-11	CARBON	3.3K	5%	1/4W
R886	1-249-427-11	CARBON	6.8K	5%	1/4W F
R887	1-249-431-11	CARBON	15K	5%	1/4W
		< SWITCH >			
S811	1-554-303-21	SWITCH, TACTILE (X-FADE)			
S812	1-554-303-21	SWITCH, TACTILE (HIT LIST)			
S813	1-554-303-21	SWITCH, TACTILE (TIME/TEXT)			
S814	1-554-303-21	SWITCH, TACTILE (REPEAT)			
S815	1-554-303-21	SWITCH, TACTILE (PROGRAM)			
S816	1-554-303-21	SWITCH, TACTILE (SHUFFLE)			
S817	1-554-303-21	SWITCH, TACTILE (CONTINUE)			
S818	1-554-303-21	SWITCH, TACTILE (POWER)			
S819	1-570-157-51	SWITCH, SLIDE (TIMER)			
S821	1-554-303-21	SWITCH, TACTILE (GROUP 1)			
S822	1-554-303-21	SWITCH, TACTILE (GROUP 2)			
S823	1-554-303-21	SWITCH, TACTILE (GROUP 3)			
S824	1-554-303-21	SWITCH, TACTILE (GROUP 4)			
S825	1-554-303-21	SWITCH, TACTILE (GROUP 8)			
S826	1-554-303-21	SWITCH, TACTILE (GROUP 7)			
S827	1-554-303-21	SWITCH, TACTILE (GROUP 6)			
S828	1-554-303-21	SWITCH, TACTILE (GROUP 5)			
**********					
*	1-661-464-11	DOOR SW BOARD			
		**********			
		< SWITCH >			
S802	1-762-386-11	SWITCH, PUSH (OPEN)			
**********					

ILLUMINATION | JACK

Ref. No.	Part No.	Description				Remark
*	1-661-471-11	ILLUMINATION BOARD				
		**********				
		< CONNECTOR >				
CN810	1-506-481-11	PIN, CONNECTOR 2P				
		< DIODE >				
D802	8-719-059-65	DIODE HLMF-KL05 (INSIDE ILLUMINATION)				
D803	8-719-059-65	DIODE HLMF-KL05 (INSIDE ILLUMINATION)				
D804	8-719-059-65	DIODE HLMF-KL05 (INSIDE ILLUMINATION)				
		< RESISTOR >				
R805	1-249-407-11	CARBON	150	5%	1/4W	F
R806	1-249-407-11	CARBON	150	5%	1/4W	F
R807	1-249-407-11	CARBON	150	5%	1/4W	F
**********						
*	A-4699-081-A	JACK BOARD, COMPLETE (CX270:US,CND)				
		**********				
*	A-4699-082-A	JACK BOARD, COMPLETE (CX270:AEP,G)				
		**********				
*	A-4699-091-A	JACK BOARD, COMPLETE (CX90ES)				
		**********				
*	4-363-146-31	HEAT SINK, V.OUT				
*	4-962-200-01	PLATE (TR), GROUND				
	7-685-871-01	SCREW +BVTT 3X6 (S)				
		< CAPACITOR >				
C404	1-126-052-11	ELECT	100uF	20%	16V	
C416	1-126-101-11	ELECT	100uF	20%	16V	
C419	1-126-022-11	ELECT	47uF	20%	16V	
C420	1-164-159-11	CERAMIC	0.1uF		50V	
C470	1-164-159-11	CERAMIC	0.1uF		50V	
C471	1-164-159-11	CERAMIC	0.1uF		50V	
C473	1-162-286-31	CERAMIC	220PF	10%	50V	
C513	1-124-473-11	ELECT	1000uF	20%	10V	
C650	1-124-282-00	ELECT	22uF	20%	25V	
C660	1-130-467-00	MYLAR	470PF	5%	50V	
C750	1-124-282-00	ELECT	22uF	20%	25V	
C760	1-130-467-00	MYLAR	470PF	5%	50V	
C901	1-161-494-00	CERAMIC	0.022uF		25V	
C902	1-124-523-11	ELECT	4700uF	20%	16V	
C903	1-126-234-11	ELECT	2200uF	20%	16V	
C904	1-126-163-11	ELECT	4.7uF	20%	50V	
C905	1-126-163-11	ELECT	4.7uF	20%	50V	
C906	1-126-163-11	ELECT	4.7uF	20%	50V	
C907	1-124-997-11	ELECT	470uF	20%	10V	
C908	1-126-163-11	ELECT	4.7uF	20%	50V	
C909	1-126-063-11	ELECT	100uF	20%	63V	
C910	1-126-059-11	ELECT	10uF	20%	50V	

Ref. No.	Part No.	Description			Remark
C911	1-164-159-11	CERAMIC	0.1uF		50V
C912	1-124-997-11	ELECT	470uF	20%	10V
C913	1-126-163-11	ELECT	4.7uF	20%	50V
C914	1-126-163-11	ELECT	4.7uF	20%	50V
⚠C920	1-113-920-11	CERAMIC	0.0022uF	20%	250V
		< CONNECTOR >			
CN413	1-770-385-11	CONNECTOR, BOARD TO BOARD 18P			
CN414	1-770-384-11	CONNECTOR, BOARD TO BOARD 16P			
CN415	1-770-383-11	CONNECTOR, BOARD TO BOARD 14P			
* CN504	1-568-951-11	PIN, CONNECTOR 2P			
CN903	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
⚠CN904	1-540-057-11	OUTLET, AC (POLAR)(AC OUTLET) (CX90ES/CX270:US,CND)			
CN905	1-564-321-00	PIN, CONNECTOR 2P (CX270:AEP,G)			
CN906	1-564-321-00	PIN, CONNECTOR 2P (CX270:AEP,G)			
		< DIODE >			
D402	8-719-987-63	DIODE 1N4148M			
D403	8-719-109-85	DIODE RD5.1ES-B2			
D411	8-719-024-99	DIODE 11ES2-NTA2B			
D470	8-719-987-63	DIODE 1N4148M			
D901	8-719-210-21	DIODE 11EQS04			
D902	8-719-210-21	DIODE 11EQS04			
D903	8-719-210-21	DIODE 11EQS04			
D904	8-719-210-21	DIODE 11EQS04			
D905	8-719-024-99	DIODE 11ES2-NTA2B			
D906	8-719-110-13	DIODE RD9.1ESB2			
		< IC >			
IC502	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)			
IC901	8-759-061-65	IC LA5602			
IC902	8-759-061-65	IC LA5602			
IC903	8-759-633-42	IC M5293L			
IC904	8-759-605-00	IC M5F78M07L			
		< JACK >			
J301	1-770-720-11	JACK, PIN 4P (LINE IN/OUT)(CX270)			
J301	1-778-064-11	JACK, PIN 4P (LINE IN/OUT)(CX90ES)			
* J401	1-764-188-11	JACK (SMALL TYPE)(DIA. 3.5)(CONTROL A1)			
* J402	1-764-188-11	JACK (SMALL TYPE)(DIA. 3.5)(CONTROL A1)			
J403	1-774-227-11	JACK, PIN 1P (MONITOR OUT)			
		< COIL >			
L1	1-412-473-21	INDUCTOR 0uH			
L2	1-412-473-21	INDUCTOR 0uH			
L407	1-412-473-21	INDUCTOR 0uH			
L408	1-412-473-21	INDUCTOR 0uH			
L470	1-412-297-11	INDUCTOR 3.3uH			
⚠L901	1-424-485-11	FILTER, LINE			

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Replace only with part number specified.

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Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description				Remark
		< TRANSISTOR >				
Q470	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q901	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q902	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		< RESISTOR >				
R417	1-249-411-11	CARBON	330	5%	1/4W	
R456	1-249-429-11	CARBON	10K	5%	1/4W	
R470	1-249-429-11	CARBON	10K	5%	1/4W	
R471	1-249-429-11	CARBON	10K	5%	1/4W	
R472	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R473	1-249-393-11	CARBON	10	5%	1/4W	F
R474	1-249-429-11	CARBON	10K	5%	1/4W	
R650	1-247-895-00	CARBON	470K	5%	1/4W	
R660	1-215-405-00	METAL	220	1%	1/4W	
R750	1-247-895-00	CARBON	470K	5%	1/4W	
R760	1-215-405-00	METAL	220	1%	1/4W	
R901	1-249-435-11	CARBON	33K	5%	1/4W	
R902	1-249-429-11	CARBON	10K	5%	1/4W	
R903	1-249-438-11	CARBON	56K	5%	1/4W	
R905	1-249-425-11	CARBON	4.7K	5%	1/4W	F
		< SWITCH >				
S401	1-762-151-11	SWITCH, SLIDE (COMMAND MODE)				
		< TRANSFORMER >				
⚠T501	1-429-680-11	TRANSFORMER, POWER (CX90ES/CX270:US,CND)				
⚠T501	1-429-681-11	TRANSFORMER, POWER (CX270:AEP,G)				
**********						
*	A-4699-088-A	JOG BOARD, COMPLETE (EXCEPT CX270: AEP,G)				
		**********				
*	A-4699-530-A	JOG BOARD, COMPLETE (CX270: AEP, G)				
		**********				
		< CAPACITOR >				
C808	1-164-159-11	CERAMIC	0.1uF		50V	
C809	1-164-159-11	CERAMIC	0.1uF		50V	
C810	1-164-159-11	CERAMIC	0.1uF		50V	
					(CX270: AEP,G)	
C811	1-124-584-00	ELECT	100uF	20%	10V	
		< CONNECTOR >				
* CN811	1-568-865-11	SOCKET, CONNECTOR 23P				
		< DIODE >				
D805	8-719-301-49	DIODE SEL2810A-CD (▮▮)				
D806	8-719-303-02	DIODE SEL2510C-D (▷)				

Ref. No.	Part No.	Description				Remark
		< IC >				
IC804	8-759-373-49	IC NJL54H400				
		< TRANSISTOR >				
Q803	8-729-900-89	TRANSISTOR DTC144ES				
		< RESISTOR >				
R832	1-247-807-31	CARBON	100	5%	1/4W	
R833	1-247-807-31	CARBON	100	5%	1/4W	
R841	1-249-415-11	CARBON	680	5%	1/4W	F
R842	1-249-417-11	CARBON	1K	5%	1/4W	F
R843	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R851	1-249-415-11	CARBON	680	5%	1/4W	F
R852	1-249-417-11	CARBON	1K	5%	1/4W	F
R853	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R854	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R855	1-247-843-11	CARBON	3.3K	5%	1/4W	
R856	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R862	1-249-415-11	CARBON	680	5%	1/4W	F
R863	1-249-407-11	CARBON	150	5%	1/4W	F
R864	1-249-429-11	CARBON	10K	5%	1/4W	
R865	1-249-429-11	CARBON	10K	5%	1/4W	
		< SWITCH >				
RE801	1-762-717-11	SWITCH, JOG (DISC/CHARACTER)				
		< SWITCH >				
S841	1-554-303-21	SWITCH, TACTILE (ENTER)				
S842	1-554-303-21	SWITCH, TACTILE (PLAYER SELECT)				
S843	1-554-303-21	SWITCH, TACTILE (INPUT)				
S844	1-554-303-21	SWITCH, TACTILE (SORT)				
S851	1-554-303-21	SWITCH, TACTILE (■)				
S852	1-554-303-21	SWITCH, TACTILE (▮▮)				
S853	1-554-303-21	SWITCH, TACTILE (▷)				
S854	1-554-303-21	SWITCH, TACTILE (CLEAR)				
S855	1-554-303-21	SWITCH, TACTILE (CHECK)				
S856	1-554-303-21	SWITCH, TACTILE (▷▷▮)				
S857	1-554-303-21	SWITCH, TACTILE (▮◁◁)				
**********						
*	1-662-500-11	KEYBOARD BOARD				
		**********				
		< CAPACITOR >				
C820	1-164-159-11	CERAMIC	0.1uF		50V	
C821	1-164-159-11	CERAMIC	0.1uF		50V	
		< CONNECTOR >				
* CN820	1-568-954-11	PIN, CONNECTOR 5P				

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KEYBOARD **L.MOTOR** **L.SW** **LUMINOUS** **MAIN**

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D821	8-719-109-85	DIODE RD5.1ES-B2	
D822	8-719-109-85	DIODE RD5.1ES-B2	
D823	8-719-109-85	DIODE RD5.1ES-B2	
		< JACK >	
J801	1-778-314-11	CONNECTOR, DIN (KEYBOARD JACK)	
		< COIL >	
L801	1-424-122-11	FILTER, NOISE	
L802	1-424-122-11	FILTER, NOISE	
L803	1-424-122-11	FILTER, NOISE	
L804	1-424-122-11	FILTER, NOISE	
		< BASE POST >	
* LP801	1-690-880-31	LEAD (WITH CONNECTOR)	
**********			
*	1-661-465-11	L.MOTOR BOARD **********	
		< MOTOR >	
M802	A-4604-847-A	MOTOR ASSY (LOADING)	
**********			
*	1-661-467-11	L.SW BOARD **********	
		< SWITCH >	
S801	1-571-300-21	SWITCH, ROTARY (LOADING DET)	
**********			
*	1-661-468-11	LUMINOUS BOARD **********	
*	4-976-473-01	HOLDER (LED-S)	
		< DIODE >	
D801	8-719-055-84	DIODE GL-528VS1	
**********			
*	A-4699-080-A	MAIN BOARD, COMPLETE (CX270:US,CND) **********	
*	A-4699-090-A	MAIN BOARD, COMPLETE (CX90ES) **********	
*	A-4699-232-A	MAIN BOARD, COMPLETE (CX270:AEP,G) **********	
	7-685-871-01	SCREW +BVTT 3X6 (S)	

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C002	1-126-101-11	ELECT	100uF	20%	16V
C301	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C302	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C303	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C304	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C305	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C306	1-102-951-00	CERAMIC	15PF	5%	50V
C307	1-102-961-00	CERAMIC	27PF	5%	50V
C308	1-136-850-11	FILM	0.1uF	5%	63V
C309	1-128-201-11	ELECT	100uF	20%	50V
C310	1-126-052-11	ELECT	100uF	20%	50V (CX90ES)
C311	1-126-022-11	ELECT	47uF	20%	16V
C312	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C313	1-163-038-91	CERAMIC CHIP	0.1uF		25V (CX90ES/CX270:US,CND)
C314	1-126-052-11	ELECT	100uF	20%	50V (CX90ES)
C401	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C402	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C403	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C405	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C406	1-163-038-91	CERAMIC CHIP	0.1uF		25V (CX90ES/CX270:US,CND)
C407	1-110-489-11	CAPACITOR	1F		5.5V
C408	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C409	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C410	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C411	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C412	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C413	1-126-022-11	ELECT	47uF	20%	16V
C414	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C415	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C417	1-136-165-00	FILM	0.1uF	5%	50V
C421	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C422	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C424	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C425	1-126-022-11	ELECT	47uF	20%	16V
C430	1-126-022-11	ELECT	47uF	20%	16V
C431	1-126-022-11	ELECT	47uF	20%	16V
C432	1-136-165-00	FILM	0.1uF	5%	50V
C433	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C434	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C435	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C436	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C441	1-136-165-00	FILM	0.1uF	5%	50V
C451	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C452	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C453	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C454	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C455	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V

Ref. No.	Part No.	Description			Remark
C456	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C480	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C481	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C482	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C490	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C491	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C501	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C502	1-126-022-11	ELECT	47uF	20%	16V
C503	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C505	1-164-085-11	CERAMIC	0.001uF	10%	50V
C506	1-141-227-00	CAP, TRIMMER	20PF (H SYNC)		
C507	1-102-958-00	CERAMIC	20PF	5%	50V
C508	1-102-852-91	CERAMIC	47PF	5%	50V
C509	1-102-518-11	CERAMIC	33PF	5%	50V
C510	1-141-227-00	CAP, TRIMMER	20PF (OSD SCREEN WIDTH V SYNC)		
C511	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C512	1-126-059-11	ELECT	10uF	20%	50V
C600	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C601	1-124-122-11	ELECT	100uF	20%	50V
C602	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C603	1-124-910-11	ELECT	47uF	20%	50V
C604	1-130-495-00	MYLAR	0.1uF	5%	50V
C605	1-126-059-11	ELECT	10uF	20%	50V
C606	1-130-495-00	MYLAR	0.1uF	5%	50V
C607	1-126-059-11	ELECT	10uF	20%	50V
C608	1-136-808-11	FILM	100PF	5%	100V (CX270)
C609	1-130-487-00	MYLAR	0.022uF	5%	50V (CX90ES)
C610	1-102-816-00	CERAMIC	120PF	5%	50V (CX270)
C610	1-102-973-00	CERAMIC	100PF	5%	50V (CX90ES)
C611	1-102-816-00	CERAMIC	120PF	5%	50V (CX270)
C611	1-102-973-00	CERAMIC	100PF	5%	50V (CX90ES)
C612	1-106-343-00	MYLAR	1000PF	5%	200V
C613	1-130-484-00	MYLAR	0.012uF	5%	50V
C614	1-136-802-11	FILM	0.015uF	5%	100V
C615	1-124-910-11	ELECT	47uF	20%	50V
C620	1-130-495-00	MYLAR	0.1uF	5%	50V (CX90ES)
C621	1-124-122-11	ELECT	100uF	20%	50V (CX90ES)
C623	1-126-059-11	ELECT	10uF	20%	50V (CX90ES)
C626	1-124-910-11	ELECT	47uF	20%	50V (CX90ES)
C627	1-136-802-11	FILM	0.015uF	5%	100V (CX90ES)
C629	1-124-910-11	ELECT	47uF	20%	50V (CX90ES)
C631	1-130-483-00	MYLAR	0.01uF	5%	50V (CX90ES)
C632	1-130-483-00	MYLAR	0.01uF	5%	50V (CX90ES)
C634	1-136-850-11	FILM	0.1uF	5%	63V
C636	1-124-910-11	ELECT	47uF	20%	50V (CX90ES)
C700	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C701	1-124-122-11	ELECT	100uF	20%	50V
C702	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C703	1-124-910-11	ELECT	47uF	20%	50V
C704	1-130-495-00	MYLAR	0.1uF	5%	50V
C705	1-126-059-11	ELECT	10uF	20%	50V
C706	1-130-495-00	MYLAR	0.1uF	5%	50V
C707	1-126-059-11	ELECT	10uF	20%	50V
C708	1-136-808-11	FILM	100PF	5%	100V (CX270)
C709	1-130-487-00	MYLAR	0.022uF	5%	50V (CX90ES)
C710	1-102-816-00	CERAMIC	120PF	5%	50V (CX270)
C710	1-102-973-00	CERAMIC	100PF	5%	50V (CX90ES)
C711	1-102-816-00	CERAMIC	120PF	5%	50V (CX270)
C711	1-102-973-00	CERAMIC	100PF	5%	50V (CX90ES)
C712	1-106-343-00	MYLAR	1000PF	5%	200V
C713	1-130-484-00	MYLAR	0.012uF	5%	50V
C714	1-136-802-11	FILM	0.015uF	5%	100V
C715	1-124-910-11	ELECT	47uF	20%	50V
C720	1-130-495-00	MYLAR	0.1uF	5%	50V (CX90ES)
C721	1-124-122-11	ELECT	100uF	20%	50V (CX90ES)
C722	1-126-059-11	ELECT	10uF	20%	50V (CX90ES)
C723	1-126-059-11	ELECT	10uF	20%	50V (CX90ES)
C724	1-126-059-11	ELECT	10uF	20%	50V (CX90ES)
C725	1-124-910-11	ELECT	47uF	20%	50V (CX90ES)
C726	1-136-802-11	FILM	0.015uF	5%	100V (CX90ES)
C727	1-136-802-11	FILM	0.015uF	5%	100V (CX90ES)
C728	1-126-059-11	ELECT	10uF	20%	50V (CX90ES)
C730	1-124-122-11	ELECT	100uF	20%	50V (CX90ES)
C731	1-130-483-00	MYLAR	0.01uF	5%	50V (CX90ES)
C732	1-130-483-00	MYLAR	0.01uF	5%	50V (CX90ES)

MAIN

Ref. No.	Part No.	Description	Remark
C734	1-136-850-11	FILM 0.1uF 5% 63V	
		< CONNECTOR >	
* CN301	1-568-839-11	SOCKET, CONNECTOR 23P	
CN304	1-506-468-11	PIN, CONNECTOR 3P	
* CN305	1-568-955-11	PIN, CONNECTOR 6P	
* CN306	1-568-951-11	PIN, CONNECTOR 2P	
* CN308	1-568-951-11	PIN, CONNECTOR 2P	
* CN403	1-568-839-11	SOCKET, CONNECTOR 23P	
* CN404	1-568-954-11	PIN, CONNECTOR 5P	
CN405	1-770-408-11	CONNECTOR, BOARD TO BOARD 14P	
CN406	1-770-410-11	CONNECTOR, BOARD TO BOARD 18P	
CN407	1-770-409-11	CONNECTOR, BOARD TO BOARD 16P	
		< DIODE >	
D301	8-719-941-86	DIODE DAN202U	
D302	8-719-941-86	DIODE DAN202U	
D401	8-719-941-86	DIODE DAN202U	
D404	8-719-941-86	DIODE DAN202U	
D405	8-719-941-86	DIODE DAN202U	
D406	8-719-941-86	DIODE DAN202U	
D407	8-719-941-86	DIODE DAN202U	
D408	8-719-977-00	DIODE DTZ5.1C	
D410	8-719-941-86	DIODE DAN202U	
D412	8-719-941-86	DIODE DAN202U	
D413	8-719-941-86	DIODE DAN202U	
D414	8-719-941-86	DIODE DAN202U	
D415	8-719-941-86	DIODE DAN202U	
D416	8-719-941-86	DIODE DAN202U	
D911	8-719-053-18	DIODE 1SR154-400TE-25	
		< GROUND TERMINAL >	
* EB603	1-537-738-21	TERMINAL, EARTH	
		< IC >	
IC301	8-759-604-90	IC M5F7907L	
IC302	8-759-361-58	IC CXA8055M (CX90ES)	
IC303	8-759-370-62	IC CXD8505BQ	
IC401	8-759-426-60	IC MB90677-TTX1022	
IC402	8-759-926-66	IC SN74HC373ANS	
IC403	8-759-926-11	IC SN74HC138ANS	
IC404	8-759-374-72	IC LC35256AM-10	
IC405	8-759-425-24	IC LE28C1001M-12	
IC406	8-759-430-89	IC LC372100PM-E42	
IC407	8-759-425-25	IC MB90095-OEM166	
IC408	8-759-634-51	IC M5218AP	
IC409	8-759-822-38	IC LA6510	
IC410	8-759-925-74	IC SN74HC04ANS	
IC411	8-759-925-74	IC SN74HC04ANS	
IC601	8-759-712-02	IC NJM2114D	
IC602	8-759-602-83	IC M5238P (CX90ES)	
IC603	8-759-900-72	IC NE5532P	

Ref. No.	Part No.	Description	Remark
IC701	8-759-712-02	IC NJM2114D	
IC702	8-759-602-83	IC M5238P (CX90ES)	
IC703	8-759-900-72	IC NE5532P	
		< COIL >	
L6	1-414-234-11	INDUCTOR, FERRITE BEAD	
L7	1-414-234-11	INDUCTOR, FERRITE BEAD	
L8	1-414-234-11	INDUCTOR, FERRITE BEAD	
L301	1-410-375-11	INDUCTOR CHIP 3.3uH	
L302	1-410-375-11	INDUCTOR CHIP 3.3uH	
L303	1-414-234-11	INDUCTOR, FERRITE BEAD	
L304	1-410-379-31	INDUCTOR CHIP 6.8uH	
L401	1-414-234-11	INDUCTOR, FERRITE BEAD	
L402	1-414-234-11	INDUCTOR, FERRITE BEAD	
L403	1-414-234-11	INDUCTOR, FERRITE BEAD	
L404	1-414-234-11	INDUCTOR, FERRITE BEAD	
L405	1-414-234-11	INDUCTOR, FERRITE BEAD	
L406	1-414-234-11	INDUCTOR, FERRITE BEAD	
L460	1-410-375-11	INDUCTOR CHIP 3.3uH	
L501	1-410-385-11	INDUCTOR CHIP 22uH	
		< TRANSISTOR >	
Q301	8-729-113-66	TRANSISTOR FN1L4M-M31	
Q401	8-729-216-22	TRANSISTOR 2SA1162-G	
Q402	8-729-113-13	TRANSISTOR FA1A4M-L33	
Q403	8-729-113-13	TRANSISTOR FA1A4M-L33	
Q404	8-729-201-27	TRANSISTOR 2SC2715-Y	
Q405	8-729-201-27	TRANSISTOR 2SC2715-Y	
Q601	8-729-231-55	TRANSISTOR 2SC2878-AB	
Q701	8-729-231-55	TRANSISTOR 2SC2878-AB	
		< RESISTOR >	
R1	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R2	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R3	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R4	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R5	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R6	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R7	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R8	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R9	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R10	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R11	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R12	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R13	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R14	1-216-295-91	CONDUCTOR, CHIP(2012)(CX270)	
R15	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R16	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R17	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R18	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R19	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	
R20	1-216-295-91	CONDUCTOR, CHIP(2012)(CX90ES)	

Ref. No.	Part No.	Description			Remark
R30	1-216-295-91	CONDUCTOR, CHIP(2012)			
			(CX90ES/CX270:US,CND)		
R301	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R302	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R303	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R304	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R305	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R306	1-216-037-00	METAL CHIP	330	5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R309	1-216-033-00	METAL CHIP	220	5%	1/10W
R310	1-216-121-91	METAL GLAZE	1M	5%	1/10W
R311	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R314	1-216-113-00	METAL CHIP	470K	5%	1/10W
R315	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R316	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R317	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R318	1-216-073-00	METAL CHIP	10K	5%	1/10W
R401	1-216-073-00	METAL CHIP	10K	5%	1/10W
R402	1-216-073-00	METAL CHIP	10K	5%	1/10W
R403	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R404	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R405	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R406	1-216-073-00	METAL CHIP	10K	5%	1/10W
R408	1-216-073-00	METAL CHIP	10K	5%	1/10W
R409	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R410	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R411	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R412	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R413	1-220-251-11	METAL GLAZE	33	5%	1/2W
R414	1-216-073-00	METAL CHIP	10K	5%	1/10W
R415	1-216-073-00	METAL CHIP	10K	5%	1/10W
R416	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R418	1-216-073-00	METAL CHIP	10K	5%	1/10W
R419	1-216-073-00	METAL CHIP	10K	5%	1/10W
R420	1-216-073-00	METAL CHIP	10K	5%	1/10W
R422	1-216-073-00	METAL CHIP	10K	5%	1/10W
R423	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R424	1-216-101-00	METAL CHIP	150K	5%	1/10W
R425	1-216-078-00	METAL GLAZE	16K	5%	1/10W
R426	1-216-078-00	METAL GLAZE	16K	5%	1/10W
R427	1-220-227-11	METAL GLAZE	1.2	10%	1/4W
R428	1-216-073-00	METAL CHIP	10K	5%	1/10W
R429	1-216-077-00	METAL CHIP	15K	5%	1/10W
R430	1-220-227-11	METAL GLAZE	1.2	10%	1/4W
R431	1-216-073-00	METAL CHIP	10K	5%	1/10W
R432	1-216-101-00	METAL CHIP	150K	5%	1/10W
R433	1-216-077-00	METAL CHIP	15K	5%	1/10W
R434	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R435	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R436	1-216-097-91	METAL GLAZE	100K	5%	1/10W
R437	1-216-103-00	METAL CHIP	180K	5%	1/10W
R438	1-216-103-00	METAL CHIP	180K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R439	1-220-227-11	METAL GLAZE	1.2	10%	1/4W
R440	1-220-227-11	METAL GLAZE	1.2	10%	1/4W
R441	1-216-001-00	METAL CHIP	10	5%	1/10W
R442	1-216-001-00	METAL CHIP	10	5%	1/10W
R443	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R444	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R445	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R446	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R447	1-216-073-00	METAL CHIP	10K	5%	1/10W
R448	1-216-093-00	METAL CHIP	68K	5%	1/10W
R449	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R450	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R451	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R452	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R453	1-216-001-00	METAL CHIP	10	5%	1/10W
R454	1-216-025-91	METAL GLAZE	100	5%	1/10W
R455	1-216-021-00	METAL CHIP	68	5%	1/10W
R457	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R458	1-216-295-91	CONDUCTOR, CHIP(2012)			
R459	1-216-073-00	METAL CHIP	10K	5%	1/10W
R460	1-216-073-00	METAL CHIP	10K	5%	1/10W
R461	1-216-073-00	METAL CHIP	10K	5%	1/10W
R462	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R463	1-216-295-91	CONDUCTOR, CHIP(2012)			
R464	1-216-073-00	METAL CHIP	10K	5%	1/10W
					(CX270:AEP,G)
R490	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R491	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R492	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R493	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R494	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R605	1-208-812-11	METAL CHIP	18K	0.50%	1/10W
R606	1-208-812-11	METAL CHIP	18K	0.50%	1/10W
R607	1-208-812-11	METAL CHIP	18K	0.50%	1/10W
					(CX90ES)
R607	1-208-814-11	METAL CHIP	22K	0.50%	1/10W
					(CX270)
R608	1-208-812-11	METAL CHIP	18K	0.50%	1/10W
					(CX90ES)
R608	1-208-814-11	METAL CHIP	22K	0.50%	1/10W
					(CX270)
R609	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R610	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R611	1-218-764-11	METAL CHIP	330K	0.50%	1/10W
R612	1-216-645-11	METAL CHIP	560	0.5%	1/10W
R613	1-216-627-11	METAL CHIP	100	0.5%	1/10W
R616	1-216-646-11	METAL CHIP	620	0.5%	1/10W
R619	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R620	1-216-635-11	METAL CHIP	220	0.5%	1/10W
					(CX90ES)
R620	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
					(CX270)
R621	1-216-635-11	METAL CHIP	220	0.5%	1/10W
					(CX90ES)

MAIN | OUTLET BOARD | RAY-CATCHER

Ref. No.	Part No.	Description			Remark
R621	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R622	1-216-635-11	METAL CHIP	220	0.5%	1/10W (CX90ES)
R622	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R623	1-216-635-11	METAL CHIP	220	0.5%	1/10W (CX90ES)
R623	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R624	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R625	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R626	1-208-774-11	METAL CHIP	470	0.50%	1/10W (CX90ES)
R630	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R631	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R632	1-216-637-11	METAL CHIP	270	0.5%	1/10W (CX90ES)
R633	1-216-637-11	METAL CHIP	270	0.5%	1/10W (CX90ES)
R634	1-208-806-11	METAL CHIP	10K	0.50%	1/10W (CX90ES)
R635	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W (CX90ES)
R636	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R637	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R638	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R639	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R640	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R705	1-208-812-11	METAL CHIP	18K	0.50%	1/10W
R706	1-208-812-11	METAL CHIP	18K	0.50%	1/10W
R707	1-208-812-11	METAL CHIP	18K	0.50%	1/10W (CX90ES)
R707	1-208-814-11	METAL CHIP	22K	0.50%	1/10W (CX270)
R708	1-208-812-11	METAL CHIP	18K	0.50%	1/10W (CX90ES)
R708	1-208-814-11	METAL CHIP	22K	0.50%	1/10W (CX270)
R709	1-216-650-11	METAL CHIP	910	0.5%	1/10W
R710	1-216-657-11	METAL CHIP	1.8K	0.5%	1/10W
R711	1-218-764-11	METAL CHIP	330K	0.50%	1/10W
R712	1-216-645-11	METAL CHIP	560	0.5%	1/10W
R713	1-216-627-11	METAL CHIP	100	0.5%	1/10W
R716	1-216-646-11	METAL CHIP	620	0.5%	1/10W
R719	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R720	1-216-635-11	METAL CHIP	220	0.5%	1/10W (CX90ES)
R720	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R721	1-216-635-11	METAL CHIP	220	0.5%	1/10W (CX90ES)
R721	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R722	1-216-635-11	METAL CHIP	220	0.5%	1/10W (CX90ES)
R722	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R723	1-216-635-11	METAL CHIP	220	0.5%	1/10W (CX90ES)
R723	1-216-687-11	METAL CHIP	33K	0.5%	1/10W (CX270)
R724	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R725	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R730	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R731	1-216-603-11	METAL CHIP	10	0.5%	1/10W (CX90ES)
R732	1-216-637-11	METAL CHIP	270	0.5%	1/10W (CX90ES)
R733	1-216-637-11	METAL CHIP	270	0.5%	1/10W (CX90ES)
R735	1-216-667-11	METAL CHIP	4.7K	0.5%	1/10W (CX90ES)
R736	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R737	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R738	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R739	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
R740	1-208-806-11	METAL CHIP	10K	0.50%	1/10W
		< VARIABLE RESISTOR >			
RV401	1-241-787-11	RES,ADJ CARBON 47K			
		< VIBRATOR >			
X301	1-579-314-11	VIBRATOR, CRYSTAL (22MHz)			
X401	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			
X501	1-767-216-11	VIBRATOR, CRYSTAL (17.7MHz)(CX270:AEP,G)			
X501	1-767-217-11	VIBRATOR, CRYSTAL (14.3MHz) (CX90ES/CX270:US,CND)			

****

*	1-662-574-11	OUTLET BOARD (CX270:AEP,G)
		**********
		< CONNECTOR >
CN908	1-696-980-11	LEAD (WITH CONNECTOR)(CX270:AEP,G)
⚠CN909	1-526-794-11	OUTLET, AC (AC OUTLET)(CX270:AEP,G)

****

*	1-661-469-11	RAY-CATCHER BOARD
		**********
*	4-985-300-01	HOLDER (P-T)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q801	8-729-926-31	PHOTO TRANSISTOR PT483F1S	
**********			
*	1-662-505-11	SW BOARD (CX270:AEP,G)	
		**********	
		< CONNECTOR >	
⚠CN907	1-696-980-11	LEAD (WITH CONNECTOR)(CX270:AEP,G)	
		< SWITCH >	
⚠S410	1-762-794-11	SWITCH, POWER (MAIN POWER)(CX270:AEP,G)	
**********			
*	1-661-466-11	T.MOTOR BOARD	
		**********	
		< MOTOR >	
M801	A-4604-847-A	MOTOR ASSY (TABLE)	
**********			
*	1-661-470-11	T.SENS BOARD	
		**********	
		< CONNECTOR >	
CN802	1-506-481-11	PIN, CONNECTOR 2P	
CN803	1-506-481-11	PIN, CONNECTOR 2P	
		< IC >	
IC801	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391	
IC802	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391	
IC803	8-749-924-18	IC PHOTO INTERRUPTER RPI-1391	
		< RESISTOR >	
R801	1-249-416-11	CARBON 820 5% 1/4W F	
R802	1-249-416-11	CARBON 820 5% 1/4W F	
R803	1-249-416-11	CARBON 820 5% 1/4W F	
R804	1-249-415-11	CARBON 680 5% 1/4W F	
**********			
		MISCELLANEOUS	
		**********	
4	1-773-183-11	WIRE (FLAT TYPE)(23 CORE)	
5	1-777-398-11	WIRE (FLAT TYPE)(23 CORE)	
304	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
⚠306	8-848-376-01	OPTICAL PICK-UP BLOCK KSS-213B/S-N	
⚠CN909	1-526-794-11	OUTLET, AC (CX270:AEP,G)	
⚠CNP901	1-575-042-21	CORD, POWER (CX90ES/CX270:US,CND)	
⚠CNP901	1-575-651-21	CORD, POWER (CX270:AEP,G)	

Ref. No.	Part No.	Description	Remark
FL801	1-517-565-11	INDICATOR TUBE, FLUORESCENT	
M101	X-2626-234-1	T.T CHAISSIS ASSY (MG)(K)(SPINDLE)	
M102	X-2625-769-1	MOTOR GEAR ASSY (MB)(RP(SLED)	
M801	A-4604-847-A	MOTOR ASSY (TABLE)	
M802	A-4604-847-A	MOTOR ASSY (LOADING)	
⚠T501	1-429-680-11	TRANSFORMER, POWER (CX90ES/CX270:US,CND)	
⚠T501	1-429-681-11	TRANSFORMER, POWER (CX270:AEP,G)	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-473-808-11	REMOTE COMMANDER (RM-DX270)	
	1-558-271-11	CORD, CONNECTION (AUDIO 108cm)	
	1-751-619-11	CORD, CONNECTION (VIDEO 1.5m)	
	1-777-172-11	CORD, CONNECTION (CONTROL-A1)(CND)	
	3-810-765-11	MANUAL,COMMONNESS INSTRUCTION (CONTROL-A1)(ENGLISH)(US)	
	3-810-765-21	MANUAL,COMMONNESS INSTRUCTION (FOR CONTROL-A1) (ENGLISH,FRENCH,GERMAN,SPANISH,DUTCH, SWEDISH,ITALIAN,PORTUGUESE,CHINESE) (CX90ES:CND/CX270:CND,AEP,G)	
	3-856-767-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,SPANISH,SWEDISH) (CX90ES:CND/CX270:CND,AEP,G)	
	3-856-767-21	MANUAL, INSTRUCTION (ENGLISH) (CX90ES:US/CX270:US)	
	3-856-767-31	MANUAL, INSTRUCTION (GERMAN,DUTCH,ITALIAN,PORTUGUESE) (CX270:AEP,G)	
	4-983-364-01	CAP (J)	
	4-984-086-01	BOOKLET (100)	
	4-988-173-01	COVER BATTERY (RM-DX270)	
**********			

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Ref. No.	Part No.	Description	Remark
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#4	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
#5	7-685-871-09	SCREW +BVTT 3X6 (S)	
#6	7-682-947-01	SCREW +PSW 3X6	
#7	7-682-548-04	SCREW +BVTT 3X8 (S)	
#8	7-624-111-04	STOP RING 7.0, TYPE -E	
#9	7-624-106-04	STOP RING 3.0, TYPE -E	
#10	7-621-772-20	SCREW +B 2X5	
#11	7-682-552-09	SCREW +B 3X16	
#12	7-621-775-00	SCREW +B 2.6X3	
#13	7-621-772-30	SCREW +B 2X6	
#15	7-624-109-04	STOP RING 5.0, TYPE -E	
#16	7-621-775-20	SCREW +B 2.6X5	
#17	7-621-255-15	SCREW +P 2X3	
#18	7-682-547-04	+B 3X6	

English
96H090467-1
Printed in Japan
© 1996.8
Published by Service and Safety Engineering Dept. (Shibaura)

9-960-731-11

Sony Corporation
Home A&V Products Company

CDP-CX90ES/CX270

SONY

SERVICE MANUAL

US Model
Canadian Model
CDP-CX90ES/CX270
AEP Model
CDP-CX270

SUPPLEMENT-1

File this supplement with the service manual.

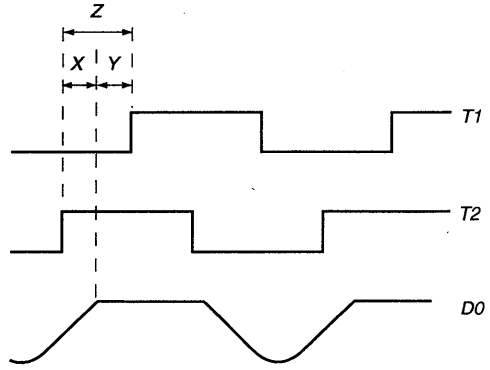
Subject : 1. CORRECTION
2. CD-TEXT TEST DISC
3. PARTS CHANGED
4. BOARD CHANGED
5. BOARD CHANGE DEPENDING ON THE CHANGE OF IC804

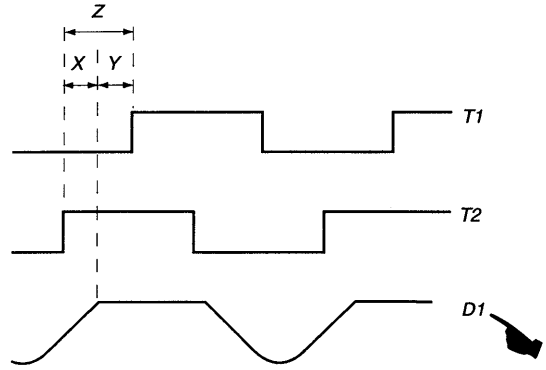
(ECN-CD601997)

1. CORRECTION

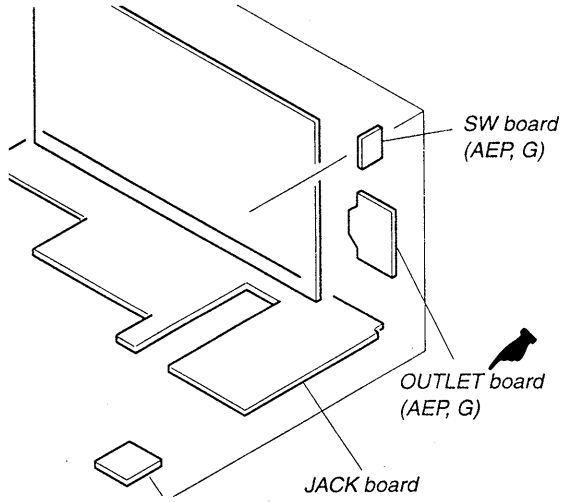
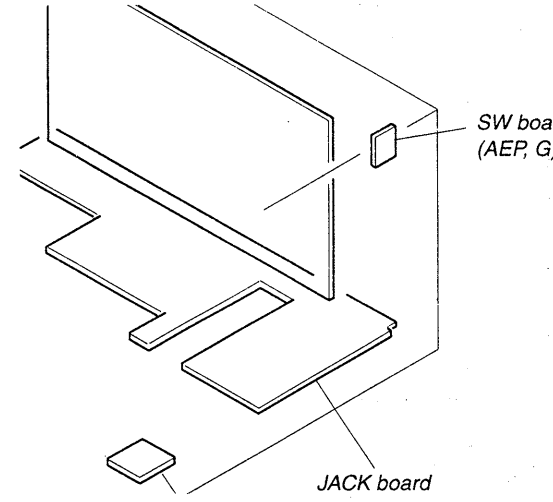
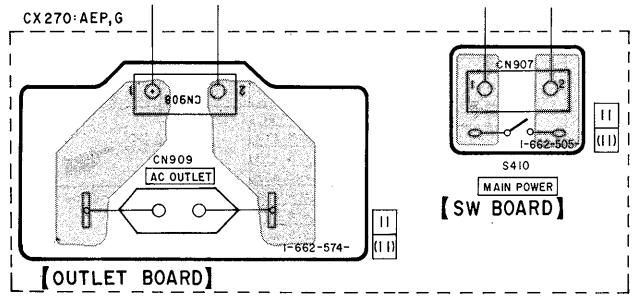
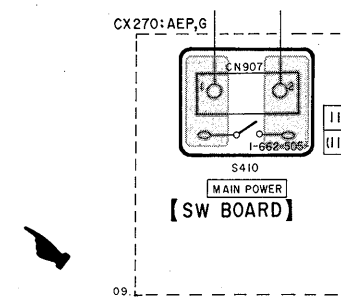
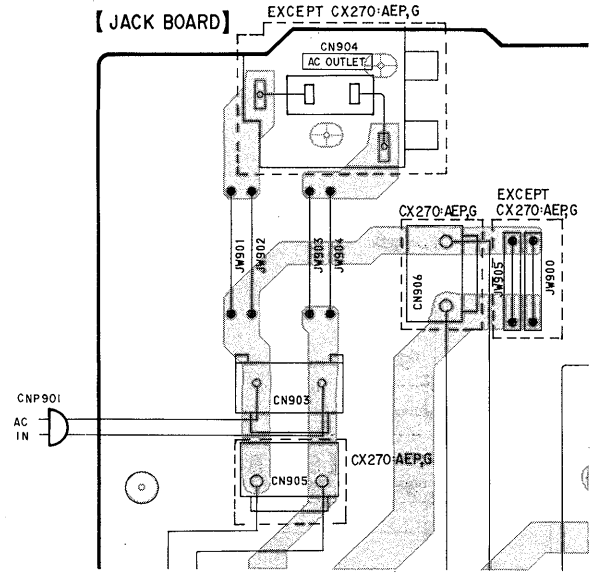
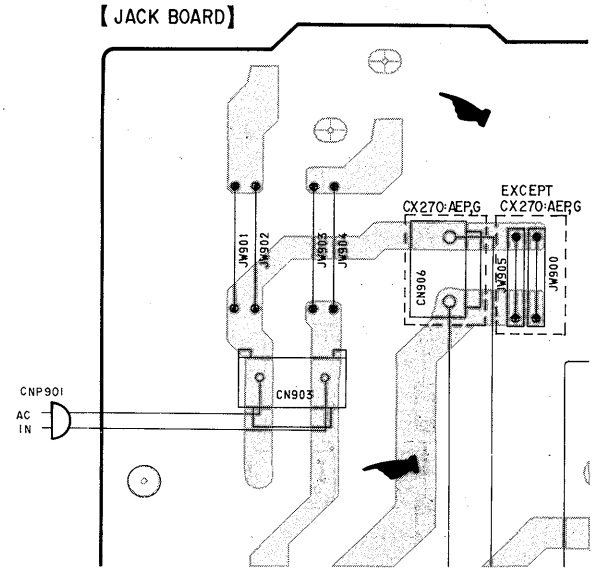
• Correct your service manual as shown below.

☛ : indicates corrected portion.

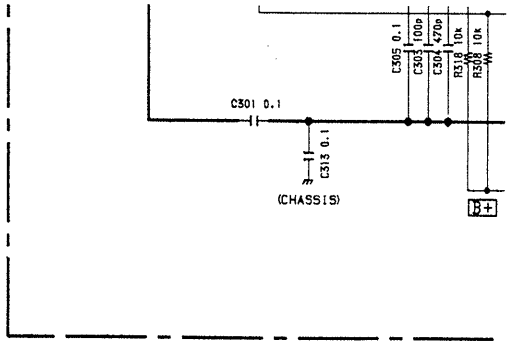
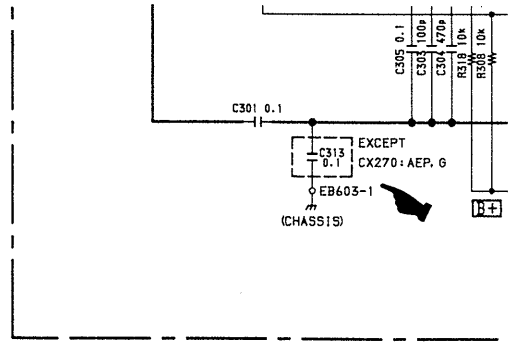
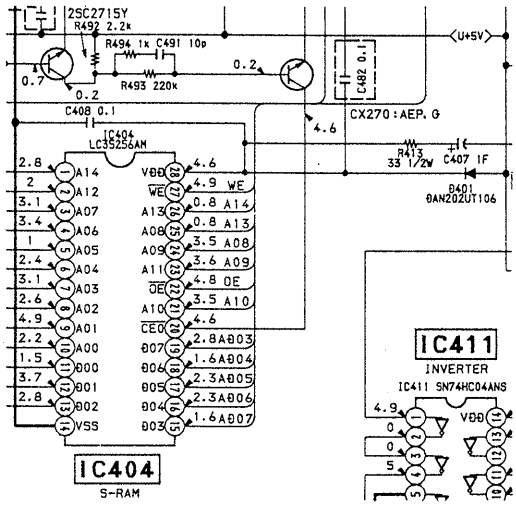
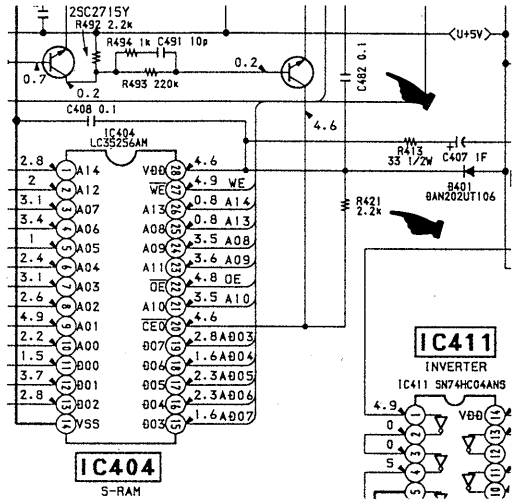
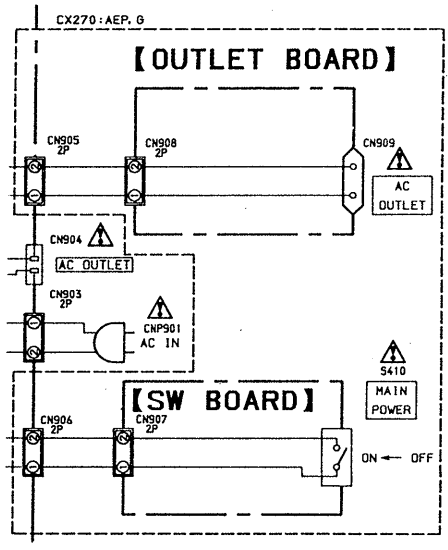
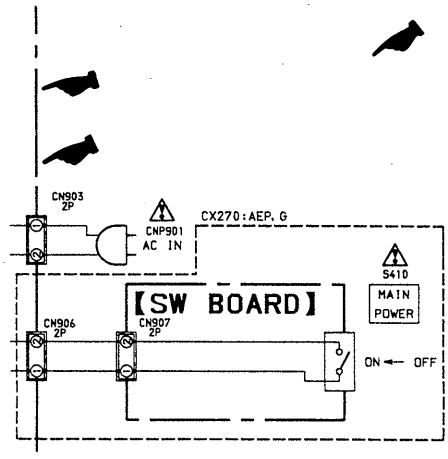
<table>
<tr><th>Page</th><th>INCORRECT</th><th>CORRECT</th></tr>
<tr><td>19</td><td>
Sequence of Aging Mode
1. Disc change
2. Load in
3. TOC read
4. Access of last track
5. 3 second playback
6. Access of first track
7. 3 second playback
8. Load out
Order of Disc Change
(1 cycle takes 3 minutes)
1. No. 40
2. No. 120
3. No. 80
4. No. 200
5. No. 180
</td><td>
Sequence of Aging Mode
1. Disc change
2. Load in
3. TOC read
4. Access of last track
5. 3 second playback
6. Access of first track
7. 3 second playback
8. Load out
Order of Disc Change
(1 cycle takes 3 minutes)
1. No. 40
2. No. 120
3. No. 80
4. No. 200
5. No. 160
</td></tr>
<tr><td>20</td><td>
Aging Method
1. Turn ON the power of the unit. Open the front cover.
2. Press the AGING START button of the remote commander for aging mode (J-2501-123-A).
3. When the disc set mode is set, the ▷ and ▮▮ LEDs blink.
4. Rotate the JOG dial. The slits (No. 40, 80, 120, 160, 200) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
5. Set whether the self-protection function during errors is equipped with the unit. Press the REPEAT button. If "REPEAT" is displayed on the Fluorescent indicator tube, it means the function is provided. If "REPEAT" is not displayed, it means the function is not provided.
</td><td>
Aging Method
1. Change the [COMMAND MODE] switch (S501) on set to [CD1].
2. Turn ON the power of the unit. Open the front cover.
3. Press the AGING START button of the remote commander for aging mode (J-2501-123-A).
4. When the disc set mode is set, the ▷ and ▮▮ LEDs blink.
5. Rotate the JOG dial. The slits (No. 40, 80, 120, 160, 200) for setting the discs will come forward. Insert the discs into these slits. Do not set the discs in other slits.
6. Set whether the self-protection function during errors is equipped with the unit. Press the REPEAT button. If "REPEAT" is displayed on the Fluorescent indicator tube, it means the function is provided. If "REPEAT" is not displayed, it means the function is not provided.
</td></tr>
<tr><td>29</td><td>
[Disc Sensor Adjustment]
Waveform 3:


</td><td>
[Disc Sensor Adjustment]
Waveform 3:


</td></tr>
</table>

Page	INCORRECT	CORRECT
31	*** CIRCUIT BOARD LOCATION ***  	*** CIRCUIT BOARD LOCATION *** 
51	**[OUTLET BOARD]** Location G–I, 1–5  	**[OUTLET BOARD]** Location G–I, 1–5 
	[JACK BOARD] Location A–D, 1–4  	**[JACK BOARD]** Location A–D, 1–4 

: indicates corrected portion.

Page	INCORRECT	CORRECT
56	**[MAIN BOARD]** Location P–Q, 8–10 	**[MAIN BOARD]** Location P–Q, 8–10 
57	**[MAIN BOARD]** Location E–G, 14–16 	**[MAIN BOARD]** Location E–G, 14–16 
59	**[OUTLET BOARD], [JACK BOARD]** Location L–O, 34–36 	**[OUTLET BOARD], [JACK BOARD]** Location L–O, 34–36 

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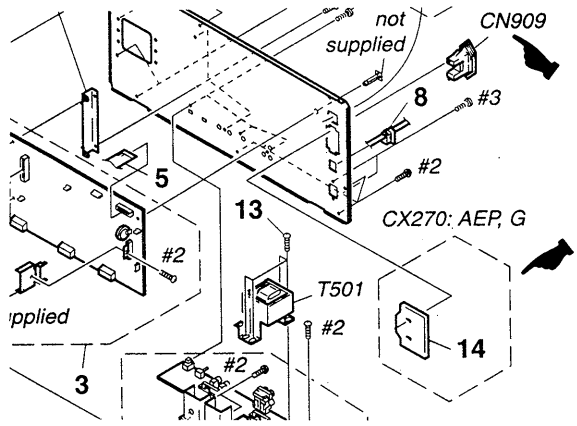
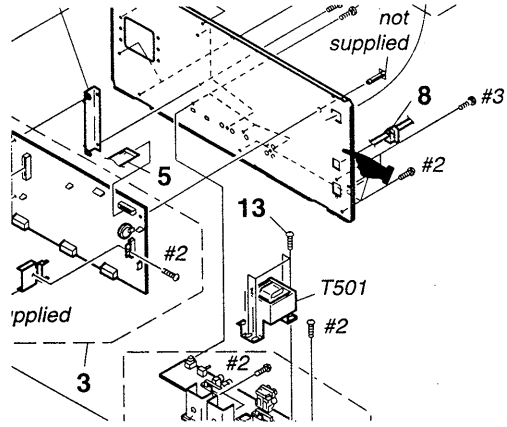
Page	INCORRECT	CORRECT
	Ref. No. Part No. Description Remark	Ref. No. Part No. Description Remark
	*** EXPLODED VIEWS ***	*** EXPLODED VIEWS ***
65	* 14 1-662-574-11 OUTLET BOARD (CX270: AEP, G) ⚠CN909 1-526-794-11 OUTLET, AC (CX270: AEP, G)	NOT USED NOT USED
		
	*** ELECTRICAL PARTS LIST ***	*** ELECTRICAL PARTS LIST ***
74	*** JACK BOARD *** < CONNECTOR > CN904 1-540-057-11 OUTLET, AC (POLAR) (AC OUTLET) (CX90ES/CX270: US, CND) CN905 1-564-321-00 PIN, CONNECTOR 2P (CX270: AEP, G)	*** JACK BOARD *** _____ _____
75	*** JOG BOARD *** _____	*** JOG BOARD *** < BASE POST > LP802 1-690-880-31 LEAD (WITH CONNECTOR)
79	*** MAIN BOARD *** _____	*** MAIN BOARD *** < RESISTOR > R421 1-216-057-00 METAL CHIP 2.2K 5% 1/10W
80	*** OUTLET BOARD *** 1-662-574-11 OUTLET BOARD (CX270: AEP, G) < CONNECTOR > CN908 1-696-980-11 LEAD (WITH CONNECTOR) (CX270: AEP, G) ⚠CN909 1-526-794-11 OUTLET, AC (AC OUTLET) (CX270: AEP, G)	*** OUTLET BOARD *** _____ _____ _____
82	*** ACCESSORIES & PACKING MATERIALS *** _____ *** HARDWARE LIST *** #18 7-682-547-04 SCREW +B3x6 _____	*** ACCESSORIES & PACKING MATERIALS *** * 4-983-803-01 CUSHION (CX270) *** HARDWARE LIST *** #18 7-682-547-04 SCREW +B3x6 (CX270) #18 7-682-547-09 SCREW +B3x6 (CX90ES)

• Abbreviation
CND : Canadian model
G : German model

2. CD-TEXT TEST DISC

This unit is able to display the test data (character information) written in the CD on its fluorescent indicator tube.
The CD-TEXT TEST DISC (TGCS-313:J-2501-126-A) is used for checking the display.
To check, perform the following procedure.

Checking Method:

1. Turn ON the power, set the disc on the disc table with the side labeled as ''test disc" as the right side, close the front cover, and chuck the disc.
2. The following will be displayed on the fluorescent indicator tube.
   Display : Main Artist Test
3. Press the [▶] button and play back the disc.
4. The following will be displayed on the fluorescent indicator tube.
   Display : 1kHz/0 dB/ L&R
5. Press the [⏮] and [⏭] buttons to switch the track. The text data of each track will be displayed.
   For details of the displayed contents for each track, refer to "Table 1 : CD-TEXT TEST DISC TEXT Data Contents" and "Table : 2 CD-TEXT TEST DISC Recorded Contents and Display".

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it. For details, refer to "Table 2 : CD-TEXT DISC Recorded Contents and Display".

Table 1 : CD-TEXT TEST DISC TEXT Data Contents (TRACKS No. 1 to 41:Normal Characters)

TRACK No.	Displayed Contents	TRACK No.	Displayed Contents
1	1kHz/0dB/L&R	22	1kHz/-90dB/L&R
2	20Hz/0dB/L&R	23	Infinity Zero w/o emphasis//L&R
3	40Hz/0dB/L&R	24	Infinity Zero with emphasis//L&R
4	100Hz/0dB/L&R	25	400Hz+7kHz(4:1)/0dB/L&R
5	200Hz/0dB/L&R	26	400Hz+7kHz(4:1)/-10dB/L&R
6	500Hz/0dB/L&R	27	19kHz+20kHz(1:1)/0dB/L&R
7	1kHz/0dB/L&R	28	19kHz+20kHz(1:1)/-10dB/L&R
8	5kHz/0dB/L&R	29	100Hz/0dB/L*
9	7kHz/0dB/L&R	30	1kHz/0dB/L*
10	10kHz/0dB/L&R	31	10kHz/0dB/L*
11	16kHz/0dB/L&R	32	20kHz/0dB/L*
12	18kHz/0dB/L&R	33	100Hz/0dB/R*
13	20kHz/0dB/L&R	34	1kHz/0dB/R*
14	1kHz/0dB/L&R	35	10kHz/0dB/R*
15	1kHz/-1dB/L&R	36	20kHz/0dB/R*
16	1kHz/-3dB/L&R	37	100Hz Squer Wave//L&R
17	1kHz/-6dB/L&R	38	1kHz Squer Wave//L&R
18	1kHz/-10dB/L&R	39	1kHz w/emphasis/-0.37dB/L&R
19	1kHz/-20dB/L&R	40	5kHz w/emphasis/-4.53dB/L&R
20	1kHz/-60dB/L&R	41	16kHz w/emphasis/-9.04dB/L&R
21	1kHz/-80dB/L&R		

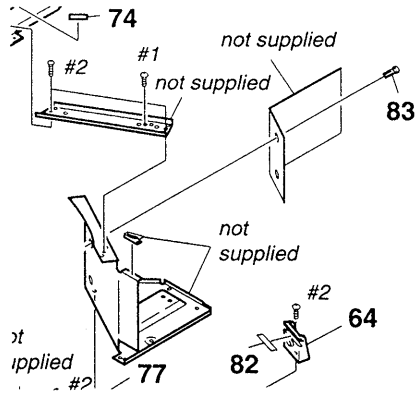
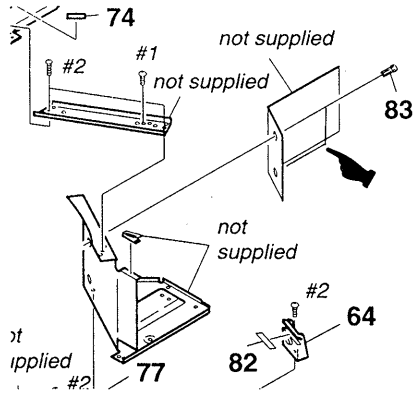
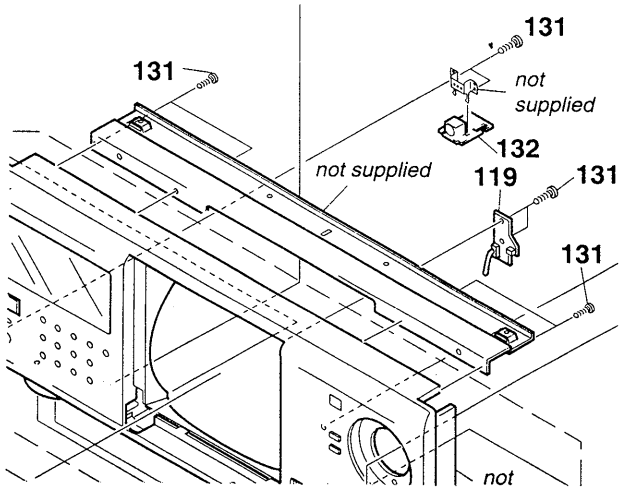
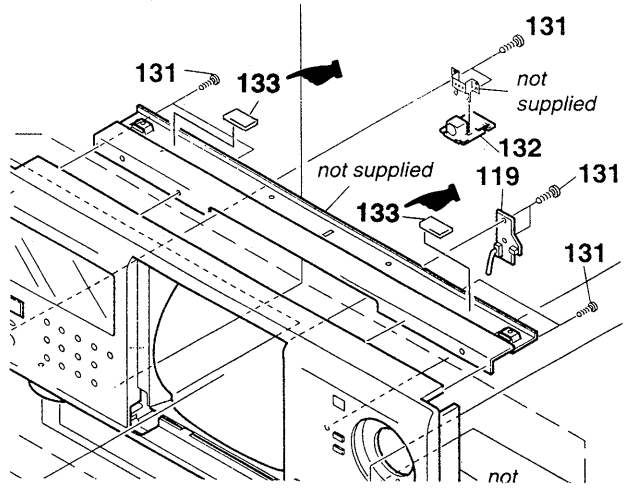
NOTE : The contents of Track No. 1 to 41 are the same as those of the current TEST DISC-their titles are displayed.

Table 2: CD-TEXT TEST DISC Recorded Contents and Display
(In this unit, some special characters cannot be displayed. This is no a fault.)

TRACK No.	Recorded contents	Display
42	! " # $ % & ' (21h to 27h)1kHz 0dB L&R	← All the same
43	( ) * + , − . / (28h to 2Fh)	← All the same
44	0 1 2 3 4 5 6 7 (30h to 37Fh)	← All the same
45	8 9 : ; < = > ? (38h to 3Fh)	← All the same
46	@ A B C D E F G (40h to 47Fh)	← All the same
47	H I J K L M N O (48h to 4Fh)	← All the same
48	P Q R S T U V W (50h to 57Fh)	← All the same
49	X Y Z [¥] ^ _ (58h to 5Fh)	X Y Z [\ ] ^ _ (58····
50	` a b c d e f g (60h to 57Fh)	← All the same
51	h i j k l m n o (68h to 6Fh)	← All the same
52	p q r s t u v w (70h to 77Fh)	← All the same
53	x y z { | } ~ ▮ (78h to 7Fh)	x y z { ¦ } ~ (78····▮ is not displayed
54	▯ ¡ ¢ £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	(A0···· All not displayed
55	♪ © ª « ¬ ® ¯ (A8h to AFh)	(A8···· All not displayed
56	° ± ² ³ ´ µ ¶ • (B0h to B7h)	(B0···· All not displayed
57	† ¹ º » ¼ ½ ¾ ¿ (B8h to BFh)	(B8···· All not displayed
58	À Á Â Ã Ä Å Æ Ç (C0h to C7Fh)	A A A A A A C (C0···· Æ is not displayed
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	E E E E I I I I (C8
60	Ð Ñ Ò Ó Ô Õ Ö × (D0h to C7Fh)	D N O O O O O (D0···· × is not displayed
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	O U U U U Y (D8···· Þ ß are not displayed
62	à á â ã ä å æ ç (E0h to E7Fh)	a a a a a a c (E0···· æ is not displayed
63	è é ê ë ì í î ï (E8h to FFh)	e e e e i i i i (E8····
64	ð ñ ò ó ô õ ö ÷ (F0h to F7Fh)	d n o o o o o (F0···· ÷ is not displayed
65	ø ù ú û ü ý þ ÿ (F8h to FFFh)	o u u u u y y (F8···· þ is not displayed
66	No.66	← All the same
67	No.67	← All the same
to	to	to
99	No.99	← All the same

3. PARTS CHANGED

: indicates changed portion.

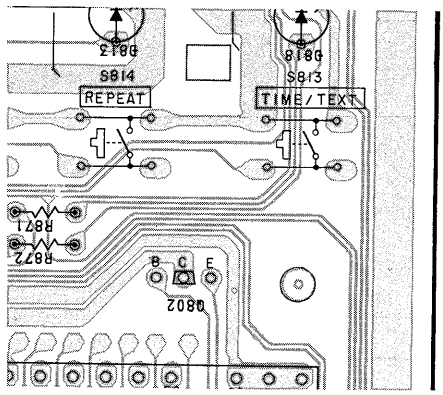
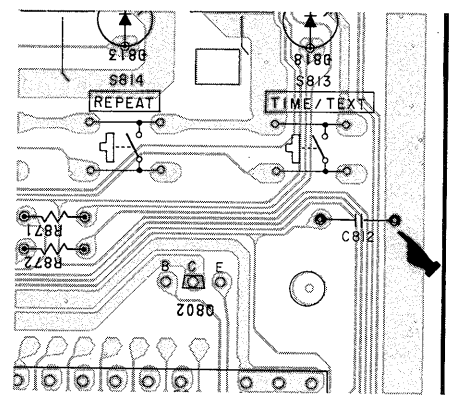
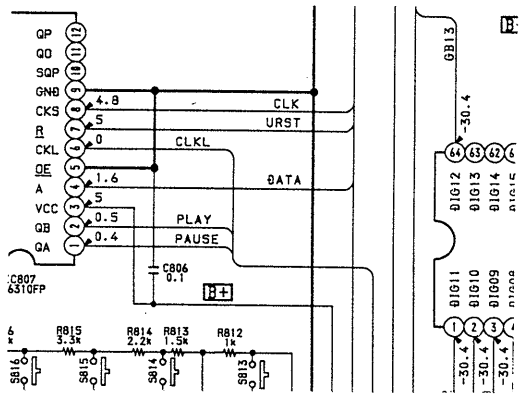
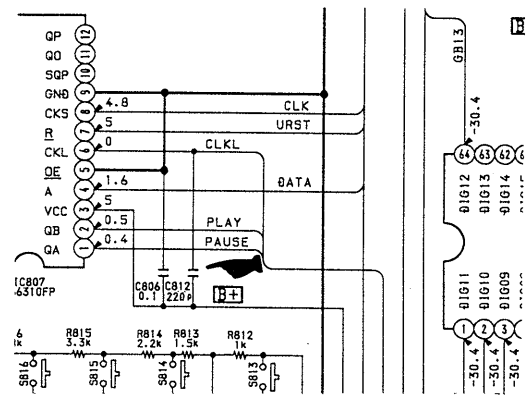
Page	FORMER				NEW			
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
			*** EXPLODED VIEWS ***				*** EXPLODED VIEWS ***	
65	15	3-704-515-01	SCREW (BV/RING)		15	3-704-515-01	SCREW (BV/RING) (CX270)	
					15	3-704-515-11	SCREW (BV/RING) (CX90ES)	
66	* 74	3-378-433-01	CUSHION, SARANET		* 74	3-378-434-01	CUSHION, SARANET	
								
67					133	4-685-553-21	CUSHION	
								
68	157	4-982-854-01	HOLDER (DISC A)		157	4-988-143-01	HOLDER (DISC A2)	
			*** ELECTRICAL PARTS LIST ***				*** ELECTRICAL PARTS LIST ***	
74			*** JACK BOARD ***				*** JACK BOARD ***	
		4-363-146-31	HEAT SINK, V.OUT			4-363-146-51	HEAT SINK, V.OUT	
75			*** JOG BOARD ***				*** JOG BOARD ***	
			< DIODE >				< DIODE >	
	D805	8-719-301-49	DIODE SEL2810A-CD (▮▮)		D805	8-719-313-45	DIODE SEL6810A-TH10 (▮▮)	

• Abbreviation
CND : Canadian model

Page	FORMER						NEW					
	Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
76			** MAIN BOARD ***						*** MAIN BOARD ***			
			< CAPACITOR >						< CAPACITOR >			
	C406	1-163-038-91	CERAMIC CHIP	0.1uF		25V (CX90ES/CX270: US, CND)	C406	1-163-038-91	CERAMIC CHIP	0.1uF		25V
	C424	1-163-251-11	CERAMIC CHIP	100PF	5%	50V						
77	C491	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V	C491	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
78			< IC >						< IC >			
	IC406	8-759-430-89	IC LC372100PM-E42				IC406	8-759-461-76	IC LC372100PM-G-02			
			< RESISTOR >						< RESISTOR >			
	R421	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R421	1-216-041-00	METAL CHIP	470	5%	1/10W
	R460	1-216-073-00	METAL CHIP	10K	5%	1/10W						
	R490	1-216-105-91	METAL CHIP	220K	5%	1/10W	R490	1-216-083-00	METAL CHIP	27K	5%	1/10W
	R491	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R491	1-216-041-00	METAL CHIP	470	5%	1/10W
	R492	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	R492	1-216-041-00	METAL CHIP	470	5%	1/10W
	R493	1-216-105-91	METAL GLAZE	220K	5%	1/10W	R493	1-216-089-91	METAL GLAZE	47K	5%	1/10W

4. BOARD CHANGED

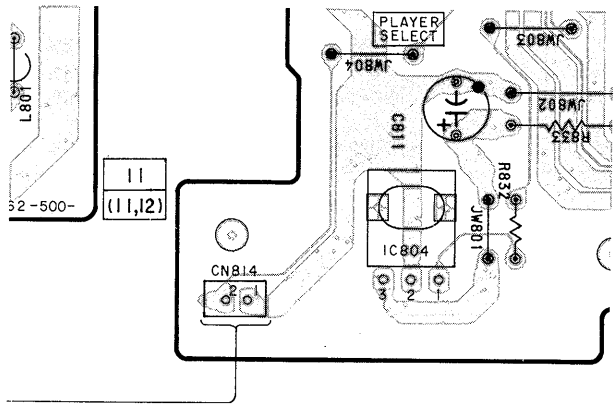
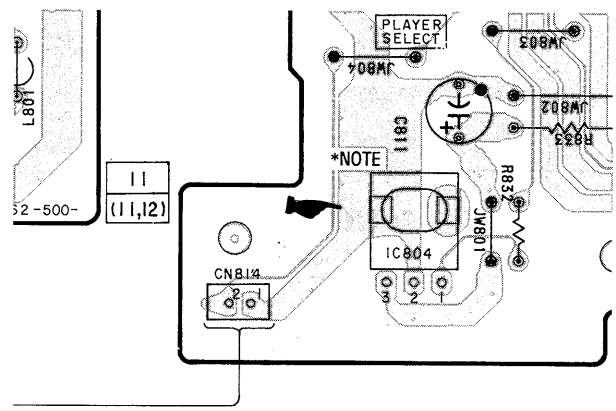
: indicates changed portion.

Page	FORMER	NEW
46	**[DISP BOARD]** Location C–E, 22–23	**[DISP BOARD]** Location C–E, 22–23
	 1-662-501- 11 (11, 12)	 1-662-501- 12 13
49	**[DISP BOARD]** Location D–F, 19–22	**[DISP BOARD]** Location D–F, 19–22
		

Page	FORMER				NEW				
	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	
			*** ELECTRICAL PARTS LIST ***				*** ELECTRICAL PARTS LIST ***		
73			*** DISP BOARD ***				*** DISP BOARD ***		
			< CAPACITOR >				< CAPACITOR >		
			———————		C812	1-162-286-11	CERAMIC 220PF 10% 50V		

5. BOARD CHANGE DEPENDING ON THE CHANGE OF IC804

: indicates changed portion.

Page	FORMER	NEW
45	**[JOG BOARD]** Location G–H, 12–13  1-662-502-11 (11,12)	**[JOG BOARD]** Location G–H, 12–13  1-662-502-12 (13)
	Ref. No. Part No. Description Remark	Ref. No. Part No. Description Remark
	*** ELECTRICAL PARTS LIST ***	*** ELECTRICAL PARTS LIST ***
75	*** JOG BOARD ***	*** JOG BOARD ***
	< IC >	< IC >
	IC804 8-759-373-49 IC NJL54H400	IC804 8-759-459-84 IC NJL56H400 *NOTE

***NOTE:**
The JOG board has changed according to the change of IC804.
The new parts of IC804 is available to use for the former board.

9-960-731-81

Sony Corporation
Home A&V Products Company

97A090470-1
Printed in Japan © 1997. 1
Published by Service and Safety Engineering Dept. (Shibaura)